A·I·B·S

bulletin

NEWS AND VIEWS IN THE BIOLOGICAL SCIENCES

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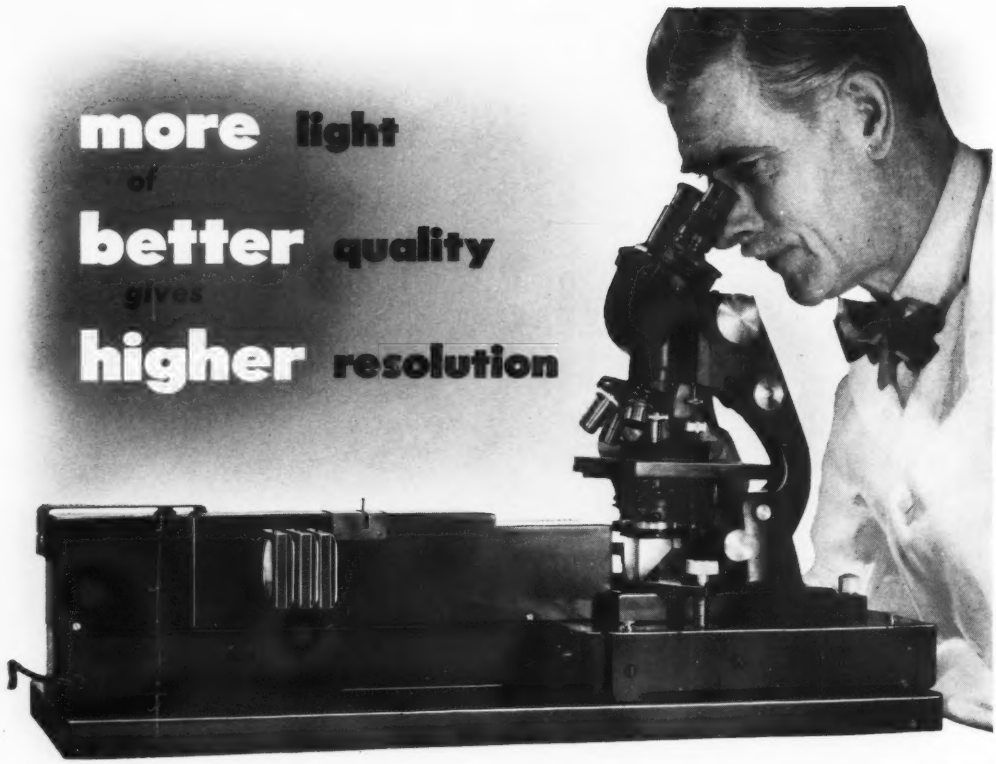

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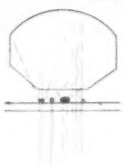

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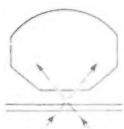

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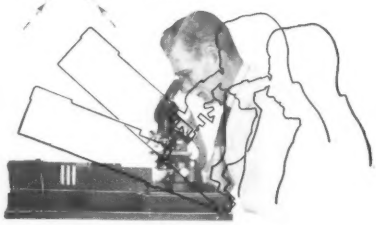

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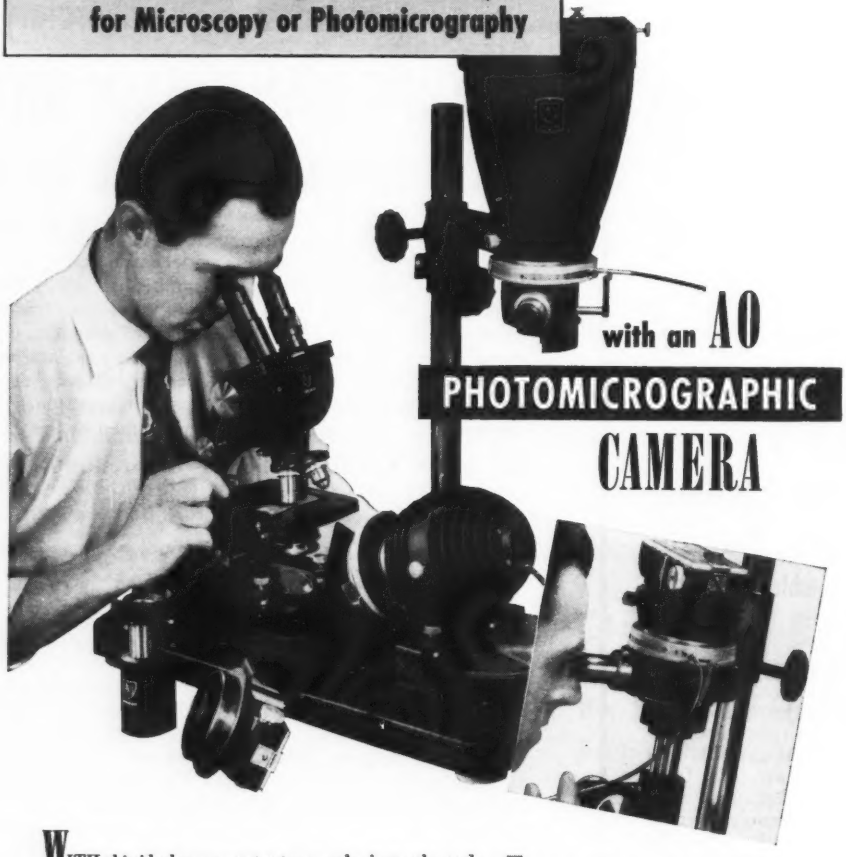

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Across the EDITOR'S DESK

• **CAREER BOOKLETS IN THE BIOLOGICAL SCIENCES.** Since the publication, in a recent issue of the *Bulletin*, of the need for informational booklets in the biological sciences, several readers have contributed available material. The **Bios Vocational Series** includes some pertinent titles: No. 1. Ornithology and Wildlife Management as Careers; No. 2. Medical Work as a Career; No. 3. Entomology as a Career; and No. 10. Plant Science as a Profession. These vary in price from ten to twenty-five cents, and can be ordered from F. G. Brooks, Mount Vernon, Iowa.

• **COLD SPRING HARBOR BIOLOGICAL LABORATORY** is offering four specialized summer courses, according to a communication from the director, M. Demerec. These courses are designed to acquaint research workers with important techniques used in microbiological and genetics problems. The course on **Bacterial Viruses** has already begun, as has the course on **Population Genetics.** However a course on **Bacterial Genetics** is scheduled for July 16-August 5, to be conducted by Drs. Witkin, Bryson, Demerec, and staff; and a course on **Cytology of Microorganisms** will be given from August 11-August 30 by Dr. DeLamater of the University of Pennsylvania. Information about these courses may be obtained from the Biological Laboratory, Cold Spring Harbor, New York.

• **BIOLOGISTS ARE ELECTED TO THE N.A.S.** At the recent annual meeting of the National Academy of Sciences in Washington, thirty new members were elected. Several prominent biologists were among those honored: C. L. Hubbs, Professor of Biology, Scripps Institution of Oceanography, La Jolla, California; L. R. Cleveland, Professor of Zoology, Harvard University; Berwind P. Kaufmann, Department of Genetics, Carnegie Institution of Washington; G. Ledyard Stebbins, Jr., Professor of Genetics, University of California, and E. L. Tatum, Professor of Biology, Stanford University.

• **NEW RESEARCH GRANTS TO BIOLOGISTS.** The Cigar Manufacturers Association of America recently announced the award of several grants for scientific studies on the genetics, biochemistry and chemistry of cigar tobacco types. These grants are part of a program recently inaugurated by the Association for the purpose of furthering fundamental research on leaf tobacco. One grant will provide funds for the breeding of new types of cigar tobacco. This project is in two parts (1) greenhouse breeding, and (2) growing in the field the more promising greenhouse experimental types. The first part will be directed by Dr. E. E. Clayton, Bureau of Plant Industry, U. S. Dept. of Agriculture, Beltsville, Maryland, and the second by Dr. Paul J. Anderson, Connecticut Agricultural Experiment Station, Windsor, Conn. Another grant for biochemical investigations on the pigments of tobacco leaves was awarded to Dr. Ray F. Dawson, Dept. of Botany, Columbia University, N. Y.

• **A NEW JOURNAL IN ZOOLOGY.** The Society of Systematic Zoology will initiate publication of a new quarterly journal, SYSTEMATIC ZOOLOGY. Articles of general interest to all zoological systematists will occupy most of the space in the journal. Book notices, news items, projects, people, museum activities, lists of systematic societies, and other miscellany will round out the contents.

Occupying a hitherto conspicuous void in the coverage of zoological fields by scientific journals, the new serial has three purposes: "(1) to publish, and therefore to encourage the preparation of, contributions on basic aspects of all fields of systematic principles and problems; (2) to provide a suitable forum for discussion of the problems of the systematist and his methods; and (3) to report the other activities of the Society of Systematic Zoology as news. Subscription rates per annum are $4.00 to members, $7.00 to non-members and institutions. A discount of $1.00 is offered to non-members making payment with order and without invoices or bills. Correspondence regarding subscriptions and membership should be addressed to the secretary of the Society, Dr. R. E. Blackwelder, Room 429, U. S. National Museum, Washington 25, D. C.

• **A NATIONAL SCIENCE FOUNDATION GRANT** has been allocated to the American Physiological Society for the purpose of undertaking a study of physiology as a science, and of furthering its contribution to the welfare of the United States. A guiding committee has been formed by the APS to direct the study under the chairmanship of R. W. Gerard, with W. O. Fenn as deputy chairman. Subcommittees will study various aspects of the problem: R. S. Morison and H. B. Steinbach will investigate personnel aspects of physiology; communication and teaching will be examined by M. S. Visscher and A. C. Burton; research aspects will be considered by Drs. Goddard and Fenn. Orr Reynolds will be on leave from the Office of Naval Research to act as executive secretary for the initial phase of the study which will formulate the full set of problems, collect and evaluate available data, and create basic procedures for further research. The second phase, planned for a succeeding eighteen-month period, will carry out the actual studies.

• **THIRTEENTH ANNUAL MEETING OF ASSOCIATION OF SOUTHEASTERN BIOLOGISTS.** The thirteenth annual meeting of the Association of Southeastern Biologists was held at Agnes Scott College, Decatur, Georgia, on April 18-19th, 1952 with presentation of 67 research papers by authors. The annual evening address at the meeting was given by Dr. C. B. van Neil, Professor of Microbiology at the Hopkins Marine Station of Stanford University. Three awards were made, based upon research in progress and projects proposed, and upon meritorious service to science and the teaching profession in the Southeast. Dr. Clyde E. Keeler of the Georgia State College for Women received the Carolina Biological Supply Company award of one hundred dollars; Mr. Robert D. Ross of Virginia Polytechnic Institute received the Phipps and Bird Fellowship award for summer research at the Mountain Lake Biological Station of the University of Virginia, and Dr. Mary Stuart McDougall of Agnes Scott College received the new award of the Southern Scientific Company of Atlanta for meritorious service and contributions as a teacher and leader in biology during a distinguished career.

In the annual elections to offices of the Association, Dr. Margaret Hess of Winthrop College, Rock Hill, S. C., became president for 1952. The President-elect is Dr. Bruce D. Reynolds of the University of Virginia. Dr. C. S. Shoup, Atomic Energy Commission, Oak Ridge, was elected Vice-

president and the new Secretary-treasurer, elected to serve a term of three years, is Dr. Mary Esther Gaulden of the Biology Division, Oak Ridge National Laboratory.

• **J. R. SCHRAMM.** Dr. J. R. Schramm, Chairman of the Department of Botany and Director of the Morris Arboretum of the University of Pennsylvania, has been awarded the Franklin Medal of the American Philosophical Society. This medal, designed by the late St. Gaudens, was struck in commemoration of the Bicentenary of Benjamin Franklin, Founder and first President of the Society. This is the ninth award of this medal. Among previous recipients are James B. Conant and Arthur H. Compton. Dr. Schramm has resigned the chairmanship of the Department, effective July 1, 1952, but he will continue as a member of the Department and as Director of the Arboretum.

• **CHEMICAL CORPS PHYSIOLOGIST REPORTS ON EUROPEAN BIOLOGY.** Dr. J. H. Wills of the Pharmacology Branch of the Chemical Corps Medical Laboratories has just returned from a two months' tour of Britain and the continent, during which time he observed the work done at many research installations. European laboratories in general, according to Dr. Wills, experience considerable difficulty in obtaining supplies, equipment and foreign journals. This hinders the work being done in overseas biological research. Many university laboratories, especially on the continent, were severely damaged during the war. Reconstruction of these installations is proceeding rapidly, with the assistance of ECA funds.

Staffs of European laboratories frequently have heavy loads of teaching duties, with the result that research activities must of necessity occupy a very small part of each man's time. An excellent grade of research is being carried out in spite of these drawbacks. The European research scientist, in Dr. Wills' estimation, tends to plan his work more carefully than his American counterpart because of the limitations of time and facilities.

From the SOCIETIES

• The new slate of Officers of the **American Society of Ichthyologists and Herpetologists** elected at the 32nd annual meeting held in Austin, Texas, April 11-14, 1952 is as follows:

President: Charles M. Bogert.
Vice-Presidents: John Tee-Van, George P. Meads, George A. Moore.
Treasurer: Coleman J. Goin.
Secretary: Arnold B. Grobman.

A very successful annual meeting was held at the University of Texas in conjunction with the Texas Herpetological Society. In addition to a series of about three dozen papers, there was a symposium on "The Species as a Natural Population" and a round-table discussion on "The Why and How of Population Dynamic Studies." John S. Meecham of the University of Florida, Paul S. Martin of the University of Michigan and R. Kirk Strawn of the University of Texas won prizes for the presentation of excellent student papers. Next year's annual meeting will be held in New York City.

• On April 16, 1952, at Charleston, S. C. the following were elected officers of the **American Society of Mammalogists:**

President: William J. Hamilton, Jr.
Vice-Presidents: William H. Burt, William B. Davis.
Recording Secretary: Randolph L. Peterson.
Corresponding Secretary: Keith R. Kelson.
Treasurer: Viola S. Schantz.

• The **American Society of Naturalists** elected the following officers for 1952:

President: Sewall Wright.
Vice-President: C. B. van Niel.
Secretary: Bentley Glass.
Treasurer: Donald G. Poulson.

• **Northeastern Division. American Phytopathological Society.** There will be no summer meeting of the Northeastern division in 1952. Instead, in accordance with the Constitution of this Division, the seventh annual meeting will be merged with that of the parent society which is meeting in Ithaca from September 8-10th. A business meeting of the Northeastern Division will also be held at Ithaca. Preliminary plans have been made, however, for a winter meeting of the Northeastern division, November 5-7th, 1952 at West Springfield, Mass. This meeting will be held in conjunction with that of the New York-New England Spray Specialists' Conference; papers will be read and a business session is planned. Details of this November meeting will be announced at a later date.

The A•I•B•S *Scope*

• **The Advisory Committee on Biochemistry** to the Office of Naval Research met April 14th in New York City. Under the chairmanship of Dr. Cornelis van Niel the Committee reviewed about 25 new proposals and 15 active projects for their scientific merit.

• **The Advisory Committee on Physiology** to the Office of Naval Research met in New York City on April 19th to evaluate the scientific merit of approximately 30 proposals and to review many of the existing projects. Dr. Ralph Gerard, chairman, presided at this meeting.

• **The Advisory Committee on Biology** to the Office of Naval Research held a two-day meeting in Washington, D. C., in mid-May. Dr. Max Kleiber, the chairman, conducted the meeting at which about 35 proposals were evaluated for their scientific merit.

• **The Advisory Committee on Hydrobiology** to the Office of Naval Research met in Washington, D. C., on May 14th to consider the methods to be used in compiling the Directory of Hydrobiology Laboratories and Personnel and the program for the future work on this project. Dr. Robert W. Hiatt is chairman of this committee and editor of the Directory.

Errata

In the April 1952 issue of the *AIBS Bulletin*, a graph on "Doctorates in the Biological Sciences" unfortunately contained an error in the interpretation of the data. Under "Botany" the proportion of men to women should be indicated by a solid bar extending approximately to the thousand line and the balance should be dotted to represent approximately 200 women rather than the small number indicated in the printed graph.

The BIOLOGY LIBRARY

One copy of each publication submitted for listing should be sent to the Editor, The AIBS Bulletin, 2101 Constitution Avenue, Washington, D. C.

The Biotic World and Man. LORUS J. and MARGERY J. MILNE. 588 pp., illustrated. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y. (1952).

The authors, who teach at the University of New Hampshire, have assembled a pictorial book on plant and animal life which makes a fascinating introduction to elementary biology. Unfortunately the generous use of photographic illustrations has resulted in a bulky book of large dimensions. The two-column format, which has become increasingly popular in the science text field in recent years, makes possible large sized drawings and photographs. The eighteen chapters cover the traditional subject matter of an elementary biology course, with emphasis on the natural history and outdoor aspects of living phenomenon. Unusual and thought-provoking are the quotes which terminate the chapters.

Botany. CARL L. WILSON. 483 pp., illustrated with photographs and line drawings. The Dryden Press, 31 West 54th Street, New York 19, N. Y. (1952). $6.10.

Designed primarily for a full year course, this newest of elementary botany texts incorporates all the advantages of a double-column format, and a wealth of large, excellently reproduced illustrations. Dr. Wilson, who is Professor of Botany at Dartmouth College, has made a real contribution to the elementary text field; it is hard to imagine any student who is introduced to botany through this text, not becoming an enthusiastic botanist—either professionally or as a hobby. The drawings by Dr. Hannah Croasdale add considerably to the teaching value of the text. The typography and design are particularly pleasing, and the use of two-color printing has made possible diagrams of unusual clarity.

College Zoology. GEORGE W. HUNTER, III and F. R. HUNTER. 821 pp., 490 illustrations. W. B. Saunders Company, West Washington Square, Philadelphia, Pa. (1949).

The authors introduce the entire zoological field by a chapter on the ecology and distribution of animals. Then follows several chapters dealing with the levels of organization in a living system. The larger part of the book is concerned with the evolution of organ systems (as illustrated by invertebrates and by vertebrates).

Closing chapters deal with the development of the individual and the race, with "The World Today" and with the importance of conservation in man's use of the environment.

Disease in Plants. NEIL E. STEVENS and RUSSELL B. STEVENS. 215 pp., 61 figures. Chronica Botanica, Waltham, Mass. (1952). $4.75.

The subtitle of "An Introduction to Agricultural Phytopathology" is quite descriptive of this volume by the late Neil Stevens of the University of Illinois, and Russell Stevens who is Associate Professor of Botany at the University of Tennessee. This book is Volume I in a "Manual of Plant Science" edited by Frans Verdoorn. Primarily concerned with diseases in plants as a biotic phenomenon, the authors have grouped the chapters under three main headings; causal agents of plant disease, factors influencing the development of pathogenic diseases, and disease control. Although a small volume, it is packed with provocative material for a beginning course in general plant pathology.

Ecological Crop Geography and Field Practices of Japan. M. Y. NUTTONSON. 213 pp., 22 maps and charts. American Institute of Crop Ecology. P. O. Box 1022, Washington, D. C. (1951).

This report, sponsored by the Department of the Army, also includes a study of Japan's natural vegetation and agroclimatic analogues in North America. This and twelve other similar international agro-climatological studies, were initiated by M. Y. Nuttonson, formerly Senior Agronomist of the U.S.D.A.

Flora of the British Isles. A. R. CLAPHAM, R. G. TUTIN, and E. F. WARBURG. 1591 pp., illustrated by 79 text figures. Cambridge University Press, 32 East 57th Street, New York 22, N. Y. (1952). $9.50.

Professor A. G. Tansley, in a short foreword to this volume, states that "a new British Flora has been a desideratum for the past half century and urgently needed during the last thirty years." The authors, from the University of Sheffield, University College, and Oxford University respectively, have made a valiant attempt to remedy this lack. The Pteridophyta, Gymnospermae and Angiospermae of the region, both native and naturalized, are included; ecological as well as strictly taxonomic information is given for each species. An accompanying volume of illustrations is in preparation.

General Biology. PERRY STRAUSBAUGH and BERNAL WEIMER. 813 pp., illustrated with photographs and drawings. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. (3rd edition, 1952) $6.00.

The first edition of this standard text in college biology appeared in 1938. Dr. Strausbaugh, Professor of Botany Emeritus at West Virginia University, and Dr. Weimer, Professor of Biology at Bethany College, West Virginia, have made numerous changes in this third revision. More stress has been placed on the use of the scientific method, the discussion of enzymes, and the integration of teaching aids throughout the chapters.

General Biology. JAMES W. MAVOR. 875 pp., The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. (4th edition, 1952). $5.75.

This fourth edition of a popular biology text is offered with the general plan of previous editions retained but recent information included in many chapters. A considerable number of new illustrations have been added. The book should continue to serve as an excellent introductory text to the general biology student.

The Genetics of Micro-organisms. D. G. CATCHESIDE. 223 pp., 35 text figures and 49 tables. Pitman Publishing Corporation, 2 West 45th Street, New York 19, N. Y. (1951). $4.50.

Dr. Catcheside, reader in plant cytogenetics at the University of Cambridge, has presented here the second volume in the Pitman Microbiology Series, based on lecture material prepared for biochemists specializing in microbiological fields. Chapter titles include a genetic analysis in *Neurospora* and other fungi, mutation and gene action, adaptation and mutation, sexual reproductive systems, yeasts, protozoa, bacteria, and viruses.

International Review of Cytology. (Volume I.) G. H. BOURNE and J. F. DANIELLI, editors. 368 pp., illustrated. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $7.80.

This review was prepared under the auspices of the International Society for Cell Biology by the editors, who are, respectively, with the London Hospital Medical College and the Zoology Department of King's College, London, England. Because of the accelerated development of new techniques, this new review devoted to cytology and cell physiology is planned to appear annually. Among the sixteen contributions by American and European biologists are "Nuclear Reproduction," "Enzymatic Capacities and their Relation to Cell Nutrition in Animals," "Enzymatic Processes in Cell Membrane Penetration," "Bacterial Cytology," "Reproduction of Bacteriophage," "Structural Agents in Mitosis," "The Behavior of Spermatozoa in the Neighborhood of Eggs," and "The Electron-Microscopic Investigation of Tissue Sections." American contributors are C. L. Huskins, George Kidder, A. D. Hershey, G. F. Fankhouser, Marcus Singer, William Montagna and G. Gomori.

An Introduction to the Study of Viruses. KENNETH M. SMITH. 106 pp., 16 plates and 5 tables. Pitman Publishing Corporation. 2 West 45th Street, New York 19, N. Y. (1950) $2.75.

This is the first volume in the Pitman Microbiology Series: the author is director of the Plant Virus Research Unit of the Agricultural Research Council, Molteno Institute, Cambridge, England. This small volume is one of the first contributions in the new field of virology, aiming to treat plant viruses, animal viruses and bacteriophages as a unified subject. Chapters include a study of the transmission and spread of viruses, arthropod relationships with viruses, isolation and purification of some representative viruses, and electron microscopy of viruses.

Laboratory Manual for General Bacteriology. G. L. PELTIER, CARL E. GEORGI, and LAWRENCE LINDGREN. 60 exercises. John Wiley & Sons, Inc. 440 Fourth Avenue, New York 16, N. Y. (4th edition, 1952) $3.50.

This fourth revision of the 1938 manual has been improved by placing greater emphasis on the functional rather than on the systematic approach to bacteriology. The authors are bacteriologists at the University of Nebraska.

Land for Tomorrow. L. DUDLEY STAMP. 230 pp., illustrated with tables and text figures. Indiana University Press, Bloomington, Indiana. (1952) $4.00.

Professor Stamp, Visiting Professor for the Patten Foundation at Indiana University in '49-'50, is a distinguished English geographer, an authority on land use. He has written two important books: "The Land of Britain, Its Use and Misuse" and "Asia, a Regional and Economic Geography." The contents of this small but provocative book include "Food for All," "Salvaging the Old World" and "Preserving the New World." The thesis is advanced that the most important undeveloped lands are not in the tropics but in the middle latitudes of the U. S., the Soviet Union, Canada, Australia and Argentina.

The Mitotic Cyle: the Cytoplasm and Nucleus During Interphase and Mitosis. ARTHUR HUGHES. 232 pp., 69 figures. Academic Press Inc. 125 East 23rd Street, New York 10, N. Y. (1952) $6.00.

Dr. Hughes is a demonstrator in anatomy at Cambridge University, England. His compact volume is not a textbook on cytology, but a review of recent knowledge in the study of the dividing cell. The six chapters take up nucleic acids, the interphase cell and the cytoplasm, the interphase nucleus, cells in division, experimental analysis, and the outlook for future research.

Morphogenesis: An Essay on Development. JOHN T. BONNER. 296 pp., 9 plates and 90 text figures. Princeton University Press, Princeton, N. J. (1952) $5.00.

This significant book by Dr. Bonner of the Biology Dept. of Princeton University is an outgrowth of a course on "Growth and Form" given at Princeton. It is a comparative study of development from the seeming simplicity of an egg to the mature form, with emphasis on the lower plants and animals, and points out the universality of certain phenomena of growth. A pertinent discussion of the physics and chemistry involved in development leads to an interpretation of patterns of growth, patterns of morphogenetic movements, polarity and symmetry, and patterns of differentiation.

Parasitism and Symbiosis. MAURICE CAULLERY. 340 pp., illustrated by 80 text figures. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. (1952) $5.50.

This is a translation by Averil M. Lysaght of an interesting treatment of the inter-relations of animals in commensalism and parasitism, and of symbiosis between animals and plants. Adaptive modifications in the reproduction of parasites, specificity in parasites and modes of host infestation, and a consideration of symbiosis as a primordial characteristic of the cell constitute separate chapters.

Pathology in Forest Practice. DOW VAWTER BAXTER. 601 pp., 224 figures. John Wiley & Sons, 440 Fourth Avenue, New York 16, N. Y. (2nd edition, 1952). $7.50.

Dr. Baxter, who is Professor of Forest Pathology in the School of Natural Resources at the University of Michigan, wrote the first edition of this text in 1943. This revision places greater emphasis on "the crop and product," to quote the preface. Like the earlier edition, the volume is intended for the forestry student, the timber grower, and the timber user. Each chapter concludes with an extended and valuable bibliography of the topic under discussion.

Proceedings of the London Conference on Optical Instruments. 1950. 264 pp., illustrated. John Wiley & Sons, 440 Fourth Avenue, New York 16, N. Y. (1952). $7.00.

This collection of papers includes an opening address by Sir Thomas Merton, and chapters by various specialists on photographic and projection lenses, reflecting microscopes, gratings and grating instruments, phase-contrast microscopes, spectrophotometers and reflecting telescopes.

Protein and Amino Acid Requirements of Mammals. ANTHONY A. ALBANESE. 155 pp., Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1950).

One of the major problems in nutrition research is the determination of the protein and amino acid requirements of various mammals, including man. It is the purpose of this volume, edited by Dr. Albanese of St. Luke's Hospital, New York City, to describe the techniques currently employed in this field and to indicate their limitations.

The Reptiles of Ohio. ROGER CONANT. 284 pp., well illustrated by photographs and distribution maps. University of Notre Dame Press, Notre Dame, Indiana.

Dr. Conant, Curator of Reptiles at the Philadelphia Zoological Gardens, published his "Reptiles of Ohio" in 1938 in the American Midland Naturalist. This material, with revisions and much new data, is now more widely available as a separate volume. Naturalists and teachers, as well as professional herpetologists, will welcome this addition to the shelf of books on native American fauna.

Soil Physical Conditions and Plant Growth. BYRON T. SHAW, editor. 491 pp., 97 figures, 65 tables. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $8.80.

This is Volume II of the agronomy Series of monographs prepared under the auspices of the American Society of

Agronomy. Dr. Shaw is Agricultural Research Administrator, U.S.D.A. "Soil as a Physical System" is authored by Lyle T. Alexander and H. E. Middleton; "Mechanical Impedance and Plant Growth" by J. F. Lutz; "Soil Water and Plant Growth" by L. A. Richards and C. H. Wadleigh; "Soil Aeration and Plant Growth" by M. B. Russell; and "Soil Temperature and Plant Growth" by S. J. Richards, R. M. Hagan and T. M. McCalla.

Taxonomy of the Pyrenomycetes. E. S. LUTRELL. 120 pp., University of Missouri, (Columbia, Mo.) Studies, Volume XXIV, No. 3. (1951) $2.50.

The author, formerly Assistant Professor of Botany at the University of Missouri and at present botanist at the Georgia Experiment Station, presents some new concepts in the classification of this large group of fungi. A lengthy and excellent bibliography adds value to the study.

Textbook of Clinical Parasitology. DAVID L. BELDING. 1139 pp., 283 text figures. Appleton-Century-Crofts, Inc. 35 West 32nd Street, New York 1, N. Y. (2nd edition, 1952).

This revision of a standard text in clinical parasitology brings up-to-date the material included in the 1942 edition, and has added the new material essential for a course in parasitology for medical students, physicians, public health personnel and biologists generally.

A Textbook of Evolution. EDWARD O. DODSON. 419 pp., 101 figures, maps and photographs. W. B. Saunders Company, West Washington Square, Philadelphia, Pa. (1952).

Dr. Dodson, Assistant Professor of Zoology at the University of Notre Dame, has succeeded in presenting the first modern text in evolution suitable for undergraduate use since the 1947 revision of the well-known Lull text. Unlike the latter, the emphasis is on the biological facts rather than the paleontological record. The five sections of the book deal with the background and definition of evolution, phylogeny, the origin of variations, the origin of species, and a final chapter on "Retrospect and Prospect."

Understanding Heredity: An Introduction to Genetics. RICHARD B. GOLDSCHMIDT. 228 pp., 49 text figures. John Wiley & Sons, 440 Fourth Avenue, New York 16, N. Y. $3.75.

Dr. Goldschmidt needs no introduction to geneticists; he is an outstanding geneticist, well qualified to write a book of this nature—a compact primer designed for the reader with a minimum of technical background in genetics. After a discussion of hereditary and non-hereditary traits, the importance of the fertilization process, and some facts of elementary Mendelism, Dr. Goldschmidt takes up the salient features of linkage, mutation, the sex chromosomes, and some of the most important technical problems of modern genetics. Suggested problems for each chapter are a stimulation to understanding, and a list of books for further study encourages the reader to learn more of genetics.

Zoology. ALFRED M. ELLIOTT. 717 pp., illustrated with photographs and text figures. Appleton-Century-Crofts, Inc. 35 West 32nd Street, New York 1, N. Y. (1952). $6.00.

The effectiveness of Dr. Elliott's book is enhanced by the striking and clear-cut line drawings designed by Olivia Jensen Ingersoll. The author, who is Associate Professor of Zoology at the University of Michigan, has used the principle of organic evolution as a central theme unifying all the chapters. The human interest is taken care of by a section of eight chapters dealing with the organ systems of man. "Zoology" is another of the recent texts using the double-column format and large size which, though it provides a a large page for illustrations, unfortunately gives the student a bulky volume to handle.

LETTERS
TO THE EDITOR

I was much interested in Dr. Harriet B. Creighton's letter in a recent issue of the *Bulletin*, in which she commented on the problem of recruiting students for graduate work in the biological sciences.

I am sure she is right in thinking that biology is less successful than the physical sciences in attracting the really able student. But I suspect the cause is not the one suggested of failure to put proper guidance material into the hands of high school counsellors and their students. It may in the first instance be that good guidance material simply does not exist. To make a field really attractive to youth more than good salaries and ready employment must be played up. Service to mankind and even romantic appeal are necessary.

But in my experience it has been very difficult to persuade able upperclassmen in college that biology is an attractive field for lifework. Medicine has a far greater attraction. It can offer more prestige than college teaching (and infinitely more than science teaching at the high school level), more glamour, and if recent figures can be trusted, about double the income. That much of the basal research on which recent medical progress is based has come from professional biologists of one kind or another does not alter the picture as the college senior sees it.

Only in the smaller liberal arts colleges do conditions seem to be very different. And here the reason seems to be a dual one: students in such colleges often lack the financial resources for medical school, and they come into closer contact with their teachers, who are often dedicated both to their field and to youth. It was well brought out in a recent survey that the majority of professional biologists have come from such institutions and especially from a certain few.

We need some really serious attention to the problem of recruitment on the part of our various biological societies, and I hope it will be forthcoming. And, though perhaps not of primary importance, the problem of adequate salaries for biologists is a real one. Even in the universities, the average salary of the biology professor is less than that in the physical (and in most other) sciences, as was brought out in a recent (September 1951) issue of the *Scientific American*. This is equally true in industry and government, with the result that youth does not even see the "cream of the crop."

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The Natural Science Program in UNESCO

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THE program of Unesco in the Natural Sciences is the result of much thought, discussion, and compromise. After all, this probably is as it should be. The program can hardly meet the complete approval of all scientists, as science has many objectives and many ways of attaining them. Opinions regarding the relative importance of scientific activities vary with the scientists and with the countries that they represent. More than 60 nations are members of Unesco and their representatives place different values on different kinds of scientific activity. The question of priorities, therefore, is always important, especially when budgets are limited. Rejection of certain projects does not necessarily mean that they are unworthy of support, but that they do not contribute as directly to the aims of Unesco as other projects with which they must compete for financial support.

Budgetary limitations and democracy in selecting fields of scientific activity account for what may be considered by some scientists as an imperfect program. The entire budget of the Department of Natural Sciences for 1952 is less than $900,000, a slight reduction from that of 1951. Rising costs without increased funds forced curtailment of important activities and postponement of others. The total budget of Unesco for 1952 is slightly more than $8.7 million, of which the U.S.A. pays one-third. Any consideration of the program in the Natural Sciences must take these facts into consideration.

The principle that "all the activities of Unesco must, in accordance with its constitution, be directed towards the peace and the prosperity of mankind" has been affirmed and reaffirmed by General Conferences of Unesco. It is proper, then, that all program activities in major fields—Education, Natural Sciences, Social Sciences, Cultural Activities, Exchange of Persons, Mass Communication, Rehabilitation Service, and Technical Assistance—should be judged by their actual and potential contributions to the attainment of the objectives of Unesco. It is natural that there should be considerable diversity of opinion regarding the relative value, within the framework of Unesco's objectives, of major fields of activity and of different activities within fields. There probably is general agreement that the most important activities should be given priority, but there can also be some disagreement as to what is most important. Does anyone really know what contributes most to "peace and prosperity"? Possibly there may be some indications of the correct answers to this question after Unesco has had a few decades instead of a few years in which to seek them.

The Natural Scientists at the 6th Session of the General Conference of Unesco, held in Paris from June 18 to July 11, 1951, constituted a working party with the unpleasant task of allocating budget cuts on the various items in the Natural Science program. This was necessary because the Director General and Executive Board had requested a budget for 1952 of $9,547,000 but only $8,718,000 was voted by the General Conference. Although the working party at its various sessions comprised representatives from 15 to 20 countries, there evolved finally reasonable agreement on major items, with considerable diversity of opinion regarding minor ones. There was, however, a sincere attempt to unite on what seemed most important to the largest number of countries.

At the 5th General Conference, at Florence, Italy, in 1950, a determined effort was made to consolidate the program of Unesco and to concentrate effort on the most important program items. At Paris in 1951 the Director General was commended for progress in simplifying and crystallizing program activities.

In conformity with this general policy, the program in the Natural Sciences is organized around three principal objectives: development of international scientific cooperation; contribution to research, particularly for the improvement of the living conditions of mankind; dissemination of science. A fourth, action in the service of human rights, is limited in scope.

There are three principal ways in which Unesco attempts to assist in international cooperation: By assisting, financially and otherwise, international scientific organizations; by improving scientific documentation and abstracting; by operating the Field Science Cooperation offices.

Assistance to international scientific unions is given because they ". . . in general, organize and provide a stimulus for international scientific life." Since 1947 Unesco has collaborated closely with The International Council of Scientific Unions (ICSU) which now has affiliated with it 12 international unions, the most recent additions being the International Union of Psychological Sciences and the International Mathematical Union. There was strong consensus among the scientists at the Paris Conference in 1951 that the activities of ICSU deserved as much support as possible. The Council for the Co-ordination of Inter-

national Congresses of Medical Sciences (CCICMS) was established in 1949 under the joint auspices of Unesco and WHO (World Health Organization). The Union of International Engineering Associations (UATI) was organized in 1951, with the help of Unesco, and in conformity with the policy of encouraging international cooperation in applied sciences and engineering, the need for which has been emphasized repeatedly by many underdeveloped countries. The International Union for the Protection of Nature has also been receiving a small subvention. The total for all subventions in 1951 was about $225,000, and the amount may be slightly less for 1952. Of the total, ICSU received by far the largest amount, the hope being that about $190,000 may be available annually out of a total allotment for subventions of about $240,000 a year. This would require a larger total budget than that for 1952.

Scientists in general favor liberal subventions to the International Unions. This was evident from the attitudes and actions of the working party at the 6th General Assembly in Paris in 1951, and the Working Group of Scientists and Engineers at the Third National Conference sponsored by the U. S. National Commission for Unesco in January 1952. The latter group adopted the following statement. "Evaluation of Unesco's grant-in-aid program. Unesco's program has consisted of joint support with organizations of scientists and engineers of international cooperative projects which either require international action or are of great importance to many national groups. The grants made have proved effective in facilitating international cooperation of scientists and engineers. The working group recognizes that we face continuing problems of evaluation, and that a balance must be struck between basic and applied science as regards magnitude of support within a limited Unesco budget. It is obvious to the working group that the assistance to medical and engineering sciences must be brought up to the level of support for the more basic sciences. This working group believes that attention should be given to the promotion of international cooperation in the agricultural sciences, if possible in cooperation with FAO. These additional activities should be supported without diminution in subsidy to the basic sciences."

There is a disposition by some scientists, by a considerable number of non-scientists, and by legislators, who must appropriate the money, to question the value of subventions to International Scientific Organizations, unless it can be shown that they contribute to Unesco's objectives. The Sixth General Conference (Paris, 1951) adopted the following resolution, "Commends the Director General for his efforts this last year in concentrating programme activities on the chief objectives of Unesco and urges an intensification of such efforts, which should include particularly a thorough study of all funds granted as subventions, to ensure that the beneficiaries will in fact be those organizations which make the greatest contributions to Unesco's priority activities; and . . .". The latter part of the resolution expresses appreciation of the vital role of the non-governmental organizations in aiding the achievement of the Unesco goals, but asks for a report on the way in which they contribute to Unesco's program.

The program resolution on scientific documentation is, "To advise and encourage international organizations concerned with the development and improvement of scientific documentation; with the standardization of terminology; with the compilation of interlingual dictionaries and with the improvement of scientific translations." So little money has been available for this work that it has been necessary to restrict activities largely to a study of needs, encouragement of non-governmental organizations, and the granting of a few small subventions for special purposes, such as a grant of about $2,500 a year to the International Abstracting Service. There is an Advisory Committee on Science Abstracting which gives advice, mostly by mail, on documentation problems.

The Field Science Cooperation offices were established in recognition of special regional problems and needs and can therefore be discussed after the discussion of Research and Dissemination of Science.

It is stipulated that the research activities of Unesco are designed "particularly for the improvement of the living conditions of mankind." A resolution adopted at the Fifth Session of the General Conference at Florence, in 1950, established the policy that Unesco would not construct and operate international laboratories but would aid in planning and organizing them. Consideration of research activities therefore is presumed to be guided by these two principles, the general understanding being that Unesco attempts to stimulate and coordinate research in basic and applied science and technology, but does not engage in it independently.

To implement the general purposes of the program, resolutions adopted at the General Conference in 1951 authorized a world survey of research institutes and laboratories to determine which can make the greatest contribution to solution of the most important scientific problems. As a result of the survey it is expected that proposals will be made, taking into consideration the activities of other specialized agencies of the United Nations and international scientific organizations, for assisting existing national and international organizations and laboratories and for the creation of coordinating agencies or new regional or international research centers. Priority is expected to be given to those subjects considered important by the Economic and Social Council.

Unesco already has assisted in planning the International Computation Center, and it is expected that

the international convention establishing the center will be adopted in 1952 and that the center will be in operation by 1953. This project is of long standing; convincing arguments for its need and probable success were presented at Florence and at Paris, and it appears to be on the way to realization. It is expected that Unesco will be represented on the Governing Board.

Studies are to be continued of the proposed European Laboratory for Nuclear research in physics (without a pile) and for an international institute of research on the brain. The latter will be studied in cooperation with the World Health Organization, and was subordinated to the Computation Center and the Nuclear Physics laboratory by the working party at Paris.

There was general and enthusiastic consensus at Paris regarding the importance of Arid Zone research. Estimates are that about one-fourth of the lands of the world are arid or semi-arid. The problem of better utilization of such lands is of vital concern to many countries where population now is pressing on means of subsistence, and it is of concern to those who are apprehensive regarding the relation between the rate of population increase in the world and the actual and potential amount of land available for growing foods, feeds, fibers, and fuel. There is an Advisory Committee on Arid Zone Research which advises regarding coordination of effort and cooperation among the agencies and institutes now operating.

In 1951 the conclusions of the Secretariat's survey on hydrologic research in Unesco member states were published in English, French, and Spanish; in 1952 special attention is given to Plant Ecology; proposals for 1953 and 1954 are to give special consideration to wind and solar energy, and to physiology of man in the Arid Zone, respectively. An international symposium on plant ecology of the Arid Zone is planned for 1953. It is to be held in one of the Latin American countries, with the help of the host country and the Field Science Cooperation office in Montevideo. Specialists in plant ecology, plant physiology, climatology, meteorology, pedology, hydrology, agronomy, soil conservation and desert range management will be invited.

In 1952 assistance is being given to the Israeli Research Council for a symposium on research of desert regions and for study of the mechanics of underground streams in sedimentary mountains; to the British Institute of Biology for its conference on the biology and productivity of hot and cold deserts; funds were given for publication on the flora of the Djebel Druze; and to the Centre de recherches sahariennes, in Algeria, for study of the underground course of the Wadi Saura.

Although possibly not completely satisfactory to everyone, including the Unesco Secretariat, the program of research activities must be judged with clear realization of the financial limitations and the need for establishing priorities among the multitude of proposals that are certain to be made by representatives of so many countries. In any case it would be premature to judge too severely the program of so young an organization as Unesco.

The objectives under Dissemination of Science are "to stimulate and facilitate the teaching and dissemination of the methods, discoveries and application of the Natural Sciences, especially as regards their influence on the living conditions of mankind . . .", and "To continue to encourage discussions on the topics chosen by Unesco and dealing with the relations of Science and Society, and to this effect, to continue the publication of Impact."

Under these mandates of the General Conference, the Department of Natural Sciences is attempting to help improve the teaching of science, especially in countries where science is not highly developed, and to help laymen to understand the importance and implications of discoveries and inventions. Many countries have asked urgently for inventories of teaching equipment, for manuals and audio-visual aids, and for information regarding methods and objectives in the teaching of science. A study of science teaching in secondary schools is planned for 1953 in cooperation with Unesco's Department of Education and with teachers' associations. Attempts are being made to supply these needs in so far as possible.

Various methods have been tried to increase understanding among the general public of science and its contributions. Exhibits have been organized; the first one on astronomy and physics, started in Latin America in 1950, has been very popular and is still being shown. Another dealt with health, and it is proposed to continue making exhibits in those fields of greatest interest in the countries where they are shown. To encourage young people in science, Unesco has collaborated in encouraging science clubs for young people and plans to organize similar clubs for adults. Likewise encouragement has been given to organizations for the advancement and dissemination of science and to associations of scientific writers. A meeting of representatives of the latter groups is planned for Paris in 1953.

The Department of Natural Sciences, cooperating with the Department of Social Sciences and of Mass Communication is studying ways of implementing the mandate regarding Science and Society. The publication *Impact* is being replanned and will be issued quarterly in English, French, and as a result of urgent requests, in Spanish, and, if funds permit, in Arabic also.

Themes for world-wide discussion were "Food and People" for 1949-50, and "Energy in the Service of Man" for 1951-52. Additional ones will be selected for the future.

Science Cooperation offices have been established as follows: In Montevideo for Latin America; in New Delhi for Southern Asia; in Cairo for the Middle East, with a branch at Istanbul; at Djakarta for South-East Asia, with a branch at Manila. These regional field offices have proved so successful in carrying out Unesco's program that the one at New Delhi will be incorporated in a General Unesco Regional office. At Paris in 1951 the Natural Scientists were somewhat concerned lest the Science Cooperation offices be absorbed, and expressed "the wish that the activities of Field Science Cooperation offices shall be maintained and if possible increased." The principle of progressive establishment of an efficient network of Unesco offices adapted to specific needs of regions distant from the Paris Headquarters has been adopted; scientists agreed, but did not wish to have scientific activities in the field offices disturbed until there had been opportunity for them to complete an experimental period.

Among the major fields of activity in the natural sciences, the distribution of funds in 1952 is roughly 32 percent for International Scientific Cooperation, about 31 percent for the Science Cooperation offices, 13 percent for research, and about 10 percent for Dissemination of science. The remainder is for general administration and indirect personnel costs. The expenditures of the Science Cooperation offices would, of course, be charged to the several kinds of activities. The percentage figures are approximate only, but give some idea of relative support for the major fields of activity.

The natural sciences can contribute greatly to the aims of Unesco. Whether the present program is the best that could be devised with the handicap of meager funds of less than a million dollars annually is a matter of individual judgment. American scientists might wish to shift emphasis somewhat, but the United States is only one of more than 60 countries in Unesco, and concessions must be made to the wishes of the majority. The Secretariat is sincere in its attempts to implement a program that is not entirely of its own choosing and deserves support. How much the Unesco program can contribute to international understanding, the welfare of peoples, and to peace remains to be seen. But it is worth trying.

Where Is Biology?

MARSTON BATES

Division of Medicine and Public Health, The Rockefeller Foundation.

STUDENTS of the biological sciences often seem to be worried about their place in the peck-order of science. They feel that the glamour, recognition and money are going to physics, chemistry, medicine, and such like things, with biology left out in the cold. There is discussion about how to "sell" biology to potential recruits, to dispensers of funds, or to the general public. In such discussion, it seems to me that there is relatively little emphasis on what it is we are trying to "sell." We talk about biology as though it were a real thing, an important area of thought. But what do we find when we start out to look for biology? Mostly we find a queer hodge-podge of conflicting, overlapping, self-important special sciences, separated from one another by imposing Greek-root labels which are bolstered by special vocabularies, special societies, special journals, special university departments and textbooks, and special worries about prestige and recognition. Where, in all of this, is biology? Where is the common ground of entomologists, histologists, systematic botanists, geneticists, physiologists, mycologists, ecologists, and so on *ad infinitum* and *ad nauseam?*

I recently checked a random sample of a thousand names from the last edition of *American Men of Science.* Eleven of these listed "biology" as their field, in comparison with 88 who listed "physics" and 134 who listed "chemistry." Yet my sample included 158 people whose work involved what I would call basic biological sciences, as compared with 254 in chemical sciences and 99 in physics. This sorting was a rather arbitrary procedure and workers in clearly applied fields were excluded, since I used separate categories for medical, agricultural and engineering sciences. It does, however, indicate that physics and chemistry are commonly regarded as appropriate fields for study, while biology is rarely so regarded.

How can we have a science of biology, if we have almost no people who claim it as a field of study? It is nonsense to allege that biology is too broad a field for any man to cover. So is chemistry, or physics, or history, or entomology. To study biology does not mean to try to learn all of the details about all kinds of organisms; it means to try to learn something of the common principles of living processes, and to try, sometimes, to look at the details of a specialty in the general perspective of life phenomena as a whole.

There are, of course, two sorts of problems involved in this matter of the fragmentation of the biological sciences. On the one hand, we have the

problems of the nature of the materials, of the subject matter of biology; and on the other hand, the semantic problems of the nature of the words that we use in talking and thinking about biology. I suspect that the two are closely related, in that the nature of the materials has strongly influenced the development of vocabulary.

Plants and animals appear to us as very different kinds of things, so that they have mostly been described with different vocabularies and studied by different people. Botany and zoology have thus had separate histories, and the common ground of the two sciences was hardly apparent until the middle of the nineteenth century with the development of the cell theory, the discovery of sex in plants, and above all the demonstration of common phenomena arising out of the study of evolution.

It is amusing to pursue this relation between language structure and the development of the biological sciences. Birds, insects, reptiles, molluscs and other major animal groups have long been distinguished by different words in European languages, which may have set the pattern for the development of distinctively labeled special sciences for their study. The seed plants, which might be taken as roughly equivalent to the vertebrates, lack distinctive words for the major groups in the common language, and their study, correspondingly, has not been broken into named specialties. Cases like grass, with agrostology, might be considered to re-enforce the point.

The split between plants and animals, however, seems to me the major verbal handicap in the development of biology; and I have often wondered whether, say, chemistry would have similarly developed as a constellation of distinct sciences if we had had basically different words in ordinary language for organic and inorganic compounds.

The handicap is very real. "Animal" and "plant" are easy, familiar words, but "organism" has a pedantic awkward sound. The student tends to think and write about an "animal community" or a "plant community," though either term seems absurd since the community concept almost always involves the interaction of both plants and animals. We should write about the "biotic community." But there you are, it sounds awkward and pedantic again. Similarly, "fauna" and "flora" come easily to the tongue, while "biota" seems odd. But if we are going to have a science of biology, we shall often have to be concerned with the relationships and study of biotas. If we use such words casually enough and frequently enough, they will presently lose their pedantic sound; and in the process, we may find a change in our patterns of thought.

The word "biology" itself is not very old. It was invented in 1802 by Gottfried Reinhold (Treveranus) and given currency by Lamarck. It first appears in English in 1822 in a very interesting book by William Lawrence entitled *Lectures on Physiology, Zoology and the Natural History of Man.* Lawrence was preoccupied with the problems of relationships between studies of structure and function, of anatomy and physiology. In the course of discussion of this, he noted that "by etymology and original acceptation, physiology means doctrine of nature, and is not very appropriately applied to that limited division of natural science, which has for its object the various forms and phenomena of life, the conditions and laws under which this state exists, and the causes which are active in producing and maintaining it. A foreign writer has proposed the more accurate term of 'biology,' or science of life."

Physiology, of course, long had a general meaning of natural philosophy or natural science, getting its special connotations of the study of function in the 17th and 18th centuries—when the similarly derived "physics" and "physician" also acquired their modern meanings. These words have all gone through great changes in meaning. Exploring in the *Oxford English Dictionary*, I find that zoology "was originally used to denote that part of medical science which treats of the medicines or remedies obtainable from animals."

The word "chemistry," I was amused to discover in this same source, was "at first probably contemptuous, like palmistry, sophistry, casuistry, etc."

But however contemptuous its origins as a word, chemistry as a science has shown a steady and integrated growth, with specialization arising in response to increasing bulk and complexity of subject matter. The scientist, however narrow the field of his working specialization, thinks of himself as a chemist working on alkaloids or cellulose or molecular structure. His loyalties are to chemistry, not to some science of alkaloidology or proteinology. He is thus able to achieve a broader organization of ideas, a more coherent plan of teaching, and a more effective development of the "guild spirit" than the biologist is. Or at least these all seem more effective to an outsider.

We have, of course, the case of the medical sciences, in apparent contradiction to this idea of mine about the relation between words and concepts in the organization of science. Medicine is composed of an even more bewildering array of "-ologies" than biology. In my sample thousand names from *American Men of Science*, I found 119 medical men listing 40 different fields of study, as compared with 158 biological scientists listing 26 fields. Yet no one can deny the effectiveness of the "guild spirit" of the medicos, or their ability at developing ideas that transcend specialties, or the coherence of their plan of teaching.

The explanation, I think, lies partly in the history of medicine, partly in the characteristics that distinguish a "professional man" from a "scholar." Historically, the specializations in medicine have arisen recently, and, as in chemistry, they reflect the increasing bulk and complexity of subject matter. The

medical man has happened to be more prone to label his specializations with names derived from the Greek, but this reflects the general medical love of jargon and mumbo-jumbo. At the same time, the disruptive tendencies inherent in this system have been countered by the pressures on medicine as a profession. The medicos, to keep up with the lawyers, bankers, soldiers and so forth, have had to present a united front; and the science of medicine reflects in some measure the unity of the profession of medicine. Even so, our medical scientists have become worried about the dangers of the increasing rigidity of the specialization pattern.

All of this, surely, is oversimplified; perhaps misleadingly so. But I am trying to defend a theory, which often involves some trimming of the facts to make them fit. I am trying to make the point that the organizational problems of biology are, for historical reasons, quite different from those of chemistry or medicine. A coherent biology must result from some sort of a federation process among already existing sciences, which is going to require conscious effort on the part of the various kinds of scientists concerned. Such effort is hardly likely to meet any success unless it arises as a response to a felt need—but there are plenty of signs that the need is becoming generally appreciated.

One could almost say that it has become fashionable nowadays to search for interrelations, for syntheses and integrations. This trend can be seen in the innumerable seminars, symposia, inter-departmental committees, institutes and the like, and in the various sorts of experiments in "general education." To many, it seems that we are over-reacting to the gibes about "knowing more and more about less and less," and the whole theory of specialization seems to have been put on the defensive.

The search for interrelations is occurring at a variety of levels. There are problems of involving the reconciliation of concepts and materials between the physico-chemical sciences and the biological sciences, and between the biological sciences and the social sciences. There are problems that transcend these, that are common to the whole field of thought known as "science." And then, at a still more general level, there are the problems of science and society—of the interrelations of the various kinds of knowledge and experience that mankind as a whole has been accumulating.

In contemplating these problems, one comes again across the question, where is biology? It is all very well to talk about the need for fostering understanding between the biological and the social sciences, for instance. It makes a fine topic for a speech. But if you actually start to arrange a marriage, or even a week-end liaison, you find, not biology, but a whole series of coy maidens named animal psychology, ecology, physiology, neuroanatomy, genetics and so forth. And jeering in the background are all of the little brothers—entomology, mycology, histology, ichthyology and limnology. *They* wouldn't think of having any truck with social science, not even if you promised to pay them with a lollipop!

Grand alliances, then, seem hardly practical until we have found biology. And biology can only be found through hard work—creative work and cooperative work. I am dubious about the schemes of the generalists, and I am not advocating any abandonment of specialization. I think every scientist should have some specialty, some narrow field of knowledge that he can know profoundly, where he can get the feel of the primary materials. I do deplore the freezing of the pattern of specialization, which is perhaps the greatest danger in the biological habit of giving specialties fancy names. And I deplore the tendency to fence a specialty off from the rest of the world, so that it becomes a microcosm, a thing-in-itself.

There is no magic wand that we can wave to shrivel the biological vocabulary and turn entomology into insect biology, ecology into natural history, and histology into tissue study. There is no love potion that, with one draught, will create understanding between biochemists and systematic botanists. There is no lamp that we can rub to summon a *jinn* to reorganize our university departments, rewrite our textbooks, and put all our society presidents out of office. But the problem, even so, is not insoluble.

Insofar as words are involved it is a question, as Humpty Dumpty long ago pointed out, of which is to be master. Entomology, zoology, physiology do not represent any eternal verities. They are words that we created; must we then take them as bounds on our actions and our thoughts? Biology is just another word, but it seems to have potentialities that we have as yet scarcely realized, and which can only be realized if we put the word to work. The general concepts, the broader understanding, the development of relationships within the life sciences and between these and the other sciences, will not come as automatic products of this word juggling. But words are the tools with which we think, and we ought to try to select the most appropriate tools for each particular job.

Insofar as subject matter is concerned, there are many encouraging signs. The biochemists have discovered bacteria, and the bacteriologists have discovered genetics. The geneticists have taken to describing *Drosophila* according to the rituals of the taxonomists and the taxonomists have become remarkably familiar with translocations and polyploids. These exchanges sometimes seem sporadic and aimless, but they are growing. The end result, surely, will be the recognition of a coherent science of biology, supported by people who think of themselves as biologists, however narrow the field of their active specialization. We will have found biology, both as a word and as a science.

Where Is the A. I. B. S.?

A report by the Membership Committee: R. W. Gerard, Chairman, Marston Bates, T. C. Byerly, J. G. Horsfall, F. S. Howlett and W. R. Singleton.

"BIOLOGY" was so named just 150 years ago yet today the life sciences are balkanized. A man is a chemist first and a petroleum chemist or rubber chemist or even a biochemist second; but a botanist or geneticist or pathologist is a biologist only in a derivative and often neglected sense. The growing emphasis on science at the national and other large scale levels, however, requires that the voices of biologists be raised in chorus if they are to be heard in the full choir of science. Whether or not one is completely happy with the increasing organization of science, this seems pretty clearly the direction of change.[1]

Biologists desperately need a voice and focal point such as the American Institute of Biological Sciences offers—witness the preceding article. Imperfect though this institution is now, and will be for some time, it has already proven to be a rallying point for biologists and has contributed some major benefits to them and their science. But most of us are apparently unaware of the need, let alone the limited moves that have been taken to meet it. Otherwise individuals and societies would not so often ask, "What can the AIBS do for us?" Their cry would rather be, if they were aware, "What can we do to build up our Institute?"

Such lack of grass roots enthusiasm was accepted by the AIBS Governing Board as both a failure and a responsibility of the Institute. A year ago, a Membership Committee was appointed to inquire into attitudes and desires of member (and non-member) societies and individuals and to make constructive recommendations to the Governing Board. Besides more personal explorations, the Committee addressed a letter to officers of all member societies, soliciting information, guidance and criticism. Many thoughtful replies reached us, and the Committee wishes to add its public thanks for the many valuable comments.

All the available information was considered at a recent Committee meeting and some immediate decisions taken and recommendations made. One decision was to publish appropriate excerpts from the letters . . . mainly the critical ones, since the object is to stimulate thought and expression by many members. Comments of all sorts will be welcomed at the Executive Office and the Editor will provide space from time to time for publication of the most helpful ones. There should emerge a fuller recognition by biologists of their needs, a clearer formulation of objectives for their Institute, and a firmer call to action by their representatives.

Officers of twelve member societies indicated general satisfaction with AIBS (although one of these societies withdrew shortly thereafter), two indicated a balance of dissatisfaction. The annual meetings under AIBS auspices were highly prized, the *Bulletin* regarded as important (at least potentially), the services vis à vis government (manpower roster, contracts, selective service, legislation, etc.) were appreciated, and some new activities (preparation of materials on careers in biology for the use of counsellors to high school students; standardization of biologic materials; improvement of public understanding of biology) were suggested. The vegetative functions (addressograph, placement, publications and like services) were looked upon with some favor but perhaps more askance. Other attitudes as well as more detail on the above are in the excerpts that follow.

"Personally I have been greatly pleased with the vigor and intelligence displayed by the AIBS. With regard to your September meetings I think they are now in themselves pretty big and that patterns of bringing smaller related sub-groups of the Society together in equally informal circumstances might be looked into."

"You have asked for a personal appraisal as well as an official one. I have taken the liberty of canvassing the opinions held about AIBS among members of our department here. . . . I asked . . . which activities they considered worthwhile. One of them answered none were. The others thought several activities worthwhile; sponsoring meetings for biologists and representing the biologist and his society in various ways. I asked them which activities were not worthwhile . . . they agreed on addressograph, placement, industry relations, publication problems as the ones to drop first. No one liked the *AIBS Bulletin*. They recognize that AIBS must have a publication if it is to inform its members of what it is doing . . . they were impressed at how much money it cost to publish . . . and were uninterested in anything published there for the most part. Perhaps the *Bulletin* fails because it is too stuffy, because it does not offer itself as a sounding board of the esteem in which AIBS is held by its members. It could be very useful . . . in guiding the Executive Committee, but more important, the member himself, if he were to read the *Bulletin* with enthusiasm, would begin to feel loyalty to his organization.

About AIBS work in publication problems . . . they said they thought that this in principle was all

[1] *Gerard, Ann. Rev. Physiol., 1952: 14: 1-12.*

right, but that the things being emphasized most were trivial, e.g., how should literature be cited. . . . I am not at all convinced that a 'centralized publication office for combined society journals' is in the immediate offing or that 'evaluation and improvement of publication and dissemination of biological knowledge' will serve a worthwhile purpose, if visualized in those terms. I am not at all convinced that it is in the interest of our Society to let editorial policy and business management policy go into the hands of the AIBS, since our society would be weakened thereby. Certainly we should be relieved of tremendous burdens of work, but we should also be relieved of a knowledge of the problems and how they can be solved. I should myself be interested in seeing a discussion of the pros and cons of this in the *AIBS Bulletin*, and perhaps others would. Would not this be the way to foster rapid growth of the activity of the Committee on Publication problems and to see whether the time is right for a centralized publication office?

The activity list mentions that AIBS stands ready to do routine work for member societies: addressograph and business office services, for example and placement service. I have had occasion to compare the cost of these services, as offered by AIBS with the cost of the same work done by business firms because it is done there more cheaply and with dispatch. Business services are a headache to offer and run, and AIBS should do so only if it can make a profit on them and at the same time save the member society considerable money. If it cannot do these things, it should discontinue the service. One should remember that the errors it makes in doing business work will be held against it.

There is one task that the AIBS can do that it hasn't apparently thought of yet. If the AIBS is to serve biologists in the long term view, it must convey to the public an understanding of the biologist, what he does and the value of this work to society. Biologists, like all scientists, are likely to do a very poor job in public relations, and this is a place that AIBS might function well; it might use radio, television and the press continuously as a media for telling the public about the biologist.

This is a discouraging appraisal of AIBS and it means that somehow the good work being done by AIBS on behalf of the biologist is not well enough known. In short, AIBS has poor relations with its own members. Because the primary activities of AIBS fall in the field of public relations, its failure to retain its members' enthusiasm is a serious matter. Certainly this failure has not arisen because the (society) representation on AIBS committees is poor.

Let me summarize what I have tried to say in this letter: AIBS has spread itself too thin; it has undertaken too many activities and does not have a financial structure which will support them all. It must reduce its commitments. It should withdraw its business office services and other services which merely duplicate what other organizations offer already and concentrate on services that are unique. The most useful of these are the annual meeting, representing the biologist in various governmental agencies, and in selling the biologist to the public through good public relations. First it should demonstrate its ability to carry on good public relations by improving the *Bulletin* and making it of interest to members."

"With reference to your letter. . . . I can unequivocally state that our society is satisfied with its present relationship to AIBS. I think that the outstanding contributions to this feeling derive from the excellent job the AIBS performed in arranging for our meetings at Columbus and Minneapolis during the past two years.

I have no suggestions to offer for any particular new services that AIBS might initiate on behalf of biology and biologists. As to your present activities, I feel that program publication and arranging for the annual meeting of member societies is by far the most important. I also feel that the evaluation and improvement of publication and dissemination of biological knowledge (is) an important service. Also, it is most important that the biologists be adequately represented both with respect to research contributions and manpower allocations in respect to programs of the military organization."

"I have had favorable comments on the progress of the AIBS from a number of quarters. I myself saw it in operation at the meetings at Minneapolis. There are, however, a number of criticisms and suggestions for improvement which may not have come to your attention.

The consensus of opinion indicates that if the AIBS is to be of most service, it should be the instrument of the individual societies and not in any sense attempt to run them. Unfortunately, that is a hard thing to work out in practice. It is the habit of holding companies, and in a sense the AIBS is that, to try to manage and govern all the independent operating units. If AIBS can really make itself the instrument of the societies, then it will have served a desirable function.

The *AIBS Bulletin* as a Society news service: there is some point to establishing a section of the *Bulletin* for news of the member societies, meetings, programs and announcements. This will help the individual secretaries to a considerable extent and reduce mailing costs. In my judgment, however, the *Bulletin* should not take individual short papers, for by so doing, it becomes the competitor of *Science* and to some degree, the *National Academy of Sciences Proceedings*.

With regard to centralized publications office: finding of suitable printers for science material is difficult, but it is often more difficult to deal with the centralized publications agency and generally more expensive. As handled by the societies much of the work is done by members without cost. There is another point of very great importance. Each society realizes that much of its existence and reason for existence depends upon its journal . . . all . . . will wish to have complete control of their journal.

Contracts with industrial and commercial organizations dependent upon research programs: here the AIBS competes directly for sustaining membership with the programs of many of the individual societies making it up. AIBS should proceed very slowly in any sustaining membership program. If one is initiated, the individual societies should receive compensation from the overall holding in AIBS in accord with the amount which they themselves . . . have been able to obtain.

The AIBS should be very careful to represent the opinions of the individual societies. This becomes particularly true . . . in the representation of the Society interests in national affairs and in legislation. A very nice distinction arises here. The representation should be that of the Society interests and not that of the parent holding company.

A national scientific register of biologists is desirable. It should be maintained current. . . . Again I would like to emphasize that in my opinion the operation of the AIBS should be made as inexpensive as possible. . . . If the AIBS can in any way further the understanding of the large majority of the populace on the part biology plays in all phases of life, then the existence of the AIBS will be worthwhile."

"The objectives stated in your letter . . . are very commendable but I doubt that the AIBS would be willing to make itself an instrument that would be satisfactory to the individual member societies. In all my contacts with the AIBS my reaction has been that I had, as a representative of my society . . . to protect (it) from the encroachment of the AIBS upon its function.

I trust that you were sincere in your request for frank opinions. I am sure that the AIBS has a definite function if it will serve the societies and help them be strong as individual groups and will not take over their functions."

"The matter of AIBS was first very ably presented to our organization . . . at a time when our financial position was strong. Our members . . . voted active membership. Later when our finances became strained and there was not much to show for AIBS membership, which cost several hundred dollars annually, the Board recommended associate (affiliate) membership instead of active membership. This action was tabled in 1950 and was not taken up in 1951 primarily because . . . (our AIBS representative) . . . presented a very splendid report to our annual meeting. In the meantime we raised membership fees to cover increased costs. With the expanding program of AIBS which will make all our members more familiar with the work of AIBS I do not anticipate any more trouble. Thus far about the only thing AIBS has offered our Association that we could use was a national organization of biologists and representation on that body. Our publication, secretarial work and annual meetings are functioning well and we, therefore, cannot make use of these services."

Annual Meeting of the American Institute of Biological Sciences, 1951-1952

FRANK P. CULLINAN

Chairman of the Governing Board

The Governing Board of the American Institute of Biological Sciences held its fifth annual meeting in Washington, D. C. on May 1. Thirty-two representatives of societies, associates, the AIBS staff and the national Research Council were present. The activities of the year were summarized by the executive secretary, reports of committees were read and approved, and future policies and activities were discussed.

During 1951-52 three societies were admitted to full membership. These were the American Bryological Society, the American Society of Naturalists and the American Society of Plant Taxonomists. One society—the Society for Industrial Microbiology—was admitted as an affiliate. The present membership of AIBS therefore includes eighteen member societies and six affiliates; the individual membership of these twenty-four societies is estimated to be twenty-two thousand. Thus AIBS today represents a considerable segment of the professional biologists of the United States.

The offices of AIBS are located in the National Re-

search Council Annex at 2101 E St. N. W. All mail, however, is received at the National Research Council address at 2101 Constitution Avenue. The staff members include, in addition to the executive secretary, an administrative assistant, Miss Ruth E. Rue, who has charge of the Office of Naval Research contract activities; a publications assistant, Mrs. Ileen Stewart, who is managing editor of the *AIBS Bulletin* and has charge of the placement services; and a business assistant, Mrs. Amy Saylor, who has charge of the addressograph lists of the AIBS societies. Additional clerical staff is employed on a part-time basis when necessary.

Mr. William W. Rubey, Chairman of the National Research Council, welcomed the members of the Governing Board and spoke briefly of his vital interest in the future of AIBS. Dr. Paul Weiss, Chairman of the Division of Biology and Agriculture of NRC, summarized the history, mandates and functions of the NRC and the Division and elaborated on the part that AIBS can play in the future in furthering the objectives of scientific societies and biologists generally.

The AIBS Bulletin. This publication has now completed the first year of its existence. It has proved to be a valuable medium for inter-society news, as well as a forum for discussion of topics of general interest to all biologists. Publishers, and concerns supplying biologists with instruments and equipment, have cooperated wholeheartedly as advertisers, and thus have contributed to the support of the *Bulletin.* It is hoped that the standard issue will consist of thirty-two pages and that significant feature articles will make the content valuable to biologists. Twelve thousand copies of each issue are mailed to individuals of member societies and an additional five hundred to a subscription list.

Dr. Ralph Cleland, chairman of the Editorial Board of the *AIBS Bulletin,* reported on a meeting of the Editorial Board, which took place in Washington on October 11, 1951. At this meeting a "Letters to the Editor" column was suggested, as well as topics and authors for forthcoming articles in the *Bulletin.* These recommendations have been incorporated into the *Bulletin* and established features, such as the Biology Library, have been enlarged and standardized according to suggestions of this Committee and various contributors. Society officers and members are urged to submit material for inclusion in "From the Societies" whenever such information might be of interest and value to other biological societies.

Meetings of Biological Societies. A report on the University of Minnesota meeting in September 1951, was published in the October 1951, issue of the *AIBS Bulletin.* Plans for the Cornell meeting have progressed satisfactorily, with a June meeting of the Local Committee scheduled at Ithaca for consideration of the final details. Twenty-two societies plan to participate; these groups will bring at least twenty-five hundred biologists to the Cornell campus in September. Housing application blanks were printed in the April 1952, *Bulletin;* additional copies may be secured from Dr. S. S. Atwood at Cornell University. The Governing Board approved the recommendations of the Executive Secretary for future meetings sites. These include:

1953—University of Wisconsin, Madison, Wisconsin,
1954—University of Florida, Gainesville, Florida,
1955—Michigan State College, East Lansing, Michigan,
1956—University of Connecticut, Storrs, Connecticut,
1957—Stanford University, Palo Alto, California.

Future meeting sites have been selected to coordinate with those of AAAS—when AIBS meets in the east AAAS will be in the west or middle-west and vice versa. The selection of sites involves as broad a geographic range as possible to permit biologists in all parts of the country to participate in the conventions.

Arranging for joint national meetings of certain AIBS societies and interested non-AIBS societies has become an important aspect of the AIBS program, since it involves public relations activities of the utmost value and it presents to the participating biologists a sense of unity and cooperation among the biological groups. However, since some AIBS societies do not take part in this annual event, the entire program is a self-supporting activity which does not utilize any income from membership dues or even general AIBS funds.

The Bio-Sciences Newsletter. During the past year four issues of a "Bio-Sciences Newsletter" originated in the AIBS office and were forwarded to the Committee on International Scientific Publication for translation, publication and distribution by the State Department. The last issue, which ran into almost 1,000,000 copies, was sent to French- and Spanish-speaking nations, as well as Australia, New Zealand and other foreign English-speaking countries. The contents include summaries of biological progress in the United States as reflected by papers and symposia presented at the national meetings of societies and research papers published in leading society journals. This venture of AIBS into international liaison with biologists has brought much gratifying comment.

Contract-Supported AIBS Activities. The ONR Advisory Committees now include four active committees; Physiology, Biology, Hydrobiology and Biochemistry. In addition there were conferences on hydrobiology and regeneration following whole body irradiation. A special edition of Biological Abstracts was prepared of abstracts of papers on work supported by ONR 1946-1950. The Physiology Committee had two

meetings, one in September 1951, at which 28 proposals were evaluated, and one in April 1952, at which 27 proposals were studied. The Biochemistry Committee also had two meetings, one in November 1951, at which 37 proposals were reviewed and one in April 1952, at which 27 proposals were reviewed. The Biology Committee had one meeting in October at which 31 proposals were studied, and another meeting in May 1952, at which 35 proposals were evaluated. Following the hydrobiology conference, the Advisory Committee on Hydrobiology was set up to prepare a directory of hydrobiology stations and personnel.

A report on the Handbook of Biological Data was given by Dr. T. C. Byerly, who noted that the Air Force Technical Report No. 6039 entitled "Standard Values in Blood" concluded the first fascicle of work by Dr. E. C. Albritton and his staff. Dr. Byerly also reported the progress of the remaining fascicles in the series, which include "Nutrition and Metabolism," "Growth and Reproduction" and "The Toxicities of Compounds."

The reactivation of the National Scientific Register contract with the Office of Scientific Personnel, NRC, provided funds for an additional three months' work for AIBS. During this period, 25,265 additional questionnaires were mailed out. Those being returned are forwarded to the Bureau of Labor Statistics office in Boston for coding as was done for the first portion of the National Scientific Register. Thus a total of some 63,000 questionnaires have been sent out to biologists. To date about 21,000 have been returned.

The AIBS Associates Program. Dr. E. G. Butler, chairman of the Associates Committee, reported that one of the suggestions of his committee had been carried out, namely extending an invitation to associates to have representatives present at the Governing Board meeting. He also noted that a year ago AIBS had four associates contributing $1,100 in dues to AIBS and that at present AIBS has fourteen associates contributing $3,150. At the close of Dr. Butler's report the representatives of the associates present were asked to contribute any pertinent information about the relationship of commercial and industrial concerns to the biologists represented by AIBS. The suggestion of a symposium at an AIBS annual meeting on a topic to be selected by the associates and organized by them was heartily approved.

Publications Committee. In Dr. A. J. Riker's absence, the report of the Publications Committee was read by the Executive Secretary. The Committee has completed the "Guide to the Preparation of Literature Citations," which was published in the April *Bulletin.* Also available are reprints of a forum on "Economics of Journal Publication," presented at the Minneapolis meetings of AIBS. The discussion and exchange of ideas about the role of a central publications office for society journals has continued during the year. However, no definite plans have been formulated or initiated. The Publications Committee recommended that the symposia on various aspects of publication problems be continued at the Cornell meeting.

The AIBS Membership Program. A report on the activities of the Membership Committee was presented by Dr. T. C. Byerly in the absence of the Committee chairman, Dr. R. Gerard. This report included many recommendations for improving the interrelations of societies with one another and with AIBS. It was pointed out that the *AIBS Bulletin* can be made a means for furnishing information to member societies about the activities of other member societies or similar professional groups. The Committee also recommended that the Member Societies be requested to give time at their respective business meetings for a report on AIBS activities. During such a report they might also consider what their society wants AIBS to do for them and what the society can and should do in the interest of biology generally, through AIBS.

Other Committee Reports. The report of the Finance Committee was presented by Dr. T. C. Byerly, chairman. The financial statement for the '51-'52 year and the budget for the '52-'53 year were approved.

Society officers, if they so desire, can secure a more detailed breakdown of the individual items in the financial statement from the society representatives or from the officers of AIBS.

The report of the Nominating Committee was presented by its chairman, Dr. E. G. Butler. Dr. T. C. Byerly was nominated chairman; Dr. Wallace Fenn was nominated vice chairman and Dr. J. S. Nicholas was named to serve as a member of the Executive Committee. These nominations were approved and the nominees declared elected.

The members of the Governing Board expressed their regrets in losing the services of Dr. C. J. Hylander, who has been Executive Secretary since 1950. Dr. Hylander is returning to the Medical Laboratories of the Army Chemical Center, Maryland, where he will be Chief of the Technical Information Office; but he will be able to continue as convention manager for AIBS.

Financial Statement 1951-52

Actual as per NAS-NRC Bus. Off. Statements, July 1, 1951-Feb. 29, 1952.

Estimated for period March 1-June 30, 1952.

Total Receipts	*Source*	*'50-'51 Deficit*	*Salaries*	*Travel*	*Equip., Supplies & Services*	*Publ. & Mail*	*Total Expend.*
$11,000 600 3,150	Society Dues Affiliate Dues Associate Dues	$8,633	$ 6,668	$ 273	—	—	$15,574
17,500	Rockefeller Foundation	—	9,561	1,900	$ 900	$ 1,000	13,361
9,484	AIBS BULLETIN	—	—	105	400	8,305	8,810
1,083	Business Services	—	—	—	1,964	—	1,964
10,687	Minnesota Convention	793	2,956	900	2,027	4,375	11,051
$53,504	TOTALS	$9,426	$19,185	$3,178	$5,291	$13,680	$50,760

5% NAS-NRC Bus. Office Service Charge..... 2,538

Total Expenditures $53,298

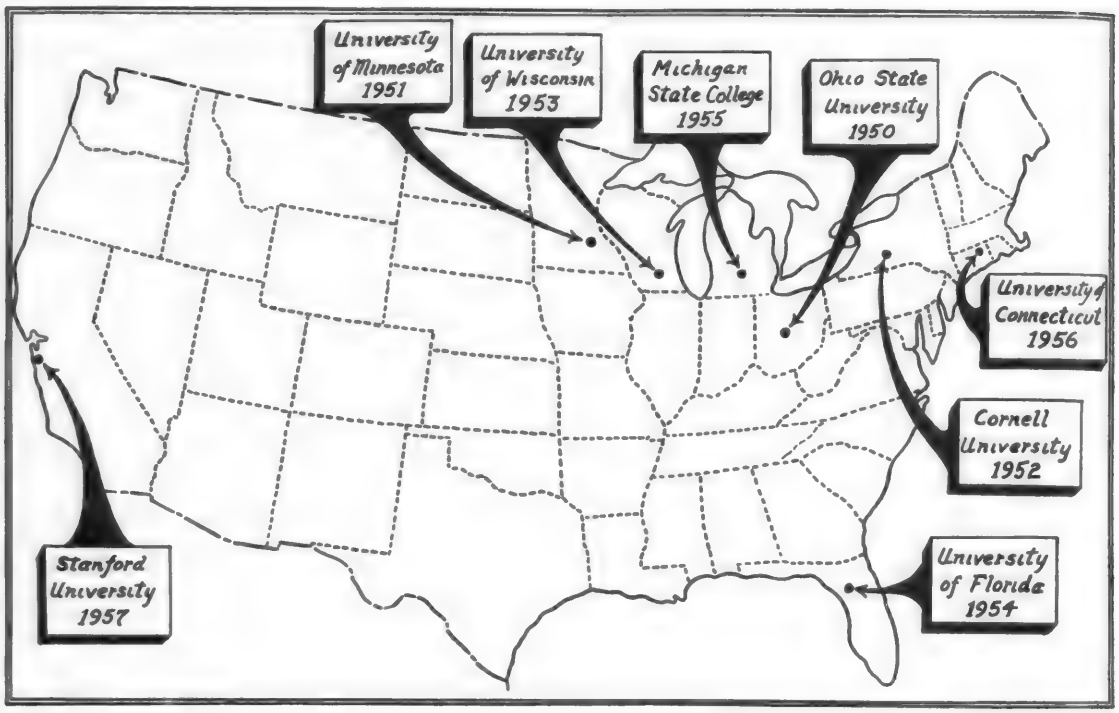
Net Balance.....$ 206

A. I. B. S. Budget for Fiscal Year 1952-1953

RECEIPTS	*Obligated*	*Contingent*	*Total*	
Rockefeller Foundation	$12,500.00	—	$12,500.00	
Society Dues	11,000.00	$1,000.00	12,000.00	
Affiliate Dues	600.00	200.00	800.00	
Associate Dues	3,150.00	1,500.00	4,650.00	
AIBS Bulletin	8,000.00	3,000.00	11,000.00	
AIBS Convention	14,000.00	3,000.00	17,000.00	
	$49,250.00	$8,700.00	$57,950.00	
			Total Receipts	$57,950.00
EXPENDITURES				
Salaries	$19,000.00	$1,000.00	$20,000.00	
Office Equipment and Supplies.....	500.00	500.00	1,000.00	
Office Service and Mail.....	2,000.00	1,000.00	3,000.00	
Travel (Staff & Comm.).....	4,000.00	1,000.00	5,000.00	
AIBS Bulletin	9,000.00	1,000.00	10,000.00	
AIBS Convention	12,000.00	3,000.00	15,000.00	
	$46,500.00	$7,500.00	$54,000.00	
	NAS—NRC Business Office Service Charge 5%		2,700.00	
			$56,700.00	
			Total Expenditures	$56,700.00
			Estimated Balance	$ 1,250.00

Meeting Sites for Biological Societies

Under Sponsorship of AIBS



The American Institute of Biological Sciences made arrangements for a meeting of biological societies on the campus of Ohio State University in 1950. The combination of a fall meeting with the university locale proved to be so popular with many biologists that a second campus meeting was held at the University of Minnesota in 1951. As a result of these two meetings, a selection of university sites has been made for the coming five years in order to permit societies to make suitable plans for joint meetings in advance.

As the location of the sites indicate, in even-numbered years AIBS endeavored to select an eastern or southern site and in the odd-numbered years a mid-western or western one. This has been done in cooperation with AAAS, whose meetings whenever possible will be in the east when AIBS is in the west, and vice versa. The selection of sites has been determined to some degree by the maximum distribution of biologists by geographic areas (see "Geographic Distribution of U. S. Biologists" p. 13, *AIBS Bulletin*, July 1951). This enables younger biologists to attend meetings which heretofore may have been held regularly only in one portion of the country. It will also enable biologists to become acquainted with universities in various states.

The selection of a site on a university campus involves many variables; few campuses are ideal in all respects for a large national meeting. Over 24 different universities have been inspected as potential meeting places but only half of these can provide a majority of the facilities needed. These dozen universities, of which six have been selected for the period 1952-57, can accommodate 2000 to 3000 participants with dormitory and eating facilities; have a suitable number of adequate rooms for scientific sessions; have large auditoria for general sessions; and have space for exhibitors. A final deciding factor is that of a suitable time for the meeting, since all the university facilities must be turned over wholly to AIBS. For all practical purposes, this time falls between August 25th and September 10th. The exact time of the meeting will have to depend upon the university calendar.

Know Your Societies

KNOW YOUR SOCIETIES introduces the first installment of a series devoted to the biological societies of the United States based on material submitted by the secretaries of the respective societies. If more detailed information is desired it may be secured directly from the society officers.

The scientific society is the democratic medium through which you, as a biologist, can participate in the growth of your special interest, can publish the results of your research, and enjoy the fraternization with kindred spirits at local and national meetings. Too few young biologists entering upon careers in research, teaching or biological engineering realize the importance of belonging to a scientific society: many may be completely unaware of their existence. Yet the stronger and the more active a society is, the greater will be the progress of science and the satisfaction of the participating scientist.

The following biological societies have contributed material for this series; if your society is not included, please bring it to the attention of your society secretary. The *AIBS Bulletin* is hoping to make this a complete coverage of all professional biological societies of the United States.

Amer. Assoc. of Economic Entomologists.
Amer. Assoc. of Immunologists.
American Bryological Society.
American Dairy Science Association.
American Institute of Nutrition.
American Microscopical Society.
American Ornithologists Union.
American Physiological Society.
American Phytopathological Society.
Amer. Soc. for Experimental Pathology.
Amer. Soc. for Horticultural Science.
Amer. Soc. for Pharm. & Exper. Therapeutics.
American Society of Agronomy.
American Society of Animal Production.
American Society of Biological Chemists.
American Soc. of Human Genetics.
American Soc. of Limnology & Oceanography.
American Society of Mammalogists.
American Society of Naturalists.
American Society of Parasitologists.
American Society of Plant Taxonomists.
American Soc. of Plant Physiologists.
Amer. Society of Protozoologists.
Biometric Society.
Botanical Society of America.
Ecological Society of America.
Genetics Society of America.
Mycological Society of America.
Phycological Society of America.
National Assoc. of Biology Teachers.
Society of American Bacteriologists.
Society of American Foresters.
Society of General Physiologists.
Society of Systematic Zoology.
Society for Industrial Microbiology.
Soc. for Study of Development & Growth.
Society for Study of Evolution.

AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS

Total Membership: 3,500. **Types of Membership:** active and honorary. **Dues:** $3.00 per year for active members. **Journals:** JOURNAL OF ECONOMIC ENTOMOLOGY, $3.50 to members, $8.00 to non-members per year; INDEX TO THE LITERATURE OF ECONOMIC ENTOMOLOGY; ENTOMA (published every second year). **Officers:** President: E. F. Knipling; Vice-president: H. G. Johnson; Secretary-treasurer: Ernest N. Cory, University of Maryland, College Park, Md.

The American Association of Economic Entomologists was organized in 1889 and incorporated under the laws of the District of Columbia. The constitution states that "all persons engaged in work in entomology or allied fields and other persons having suitable training or a deep and sincere interest in entomology may become Active Members at any annual meeting by a two-thirds vote of the members present upon recommendation of the Committee on Membership after a regularly executed application, endorsed by two Active Members and accompanied by required fee, has been filed with the Secretary-treasurer." There is an honorary membership list at the present time consisting of Dr. H. T. Fernald and and Dr. Herbert T. Osborn. Dues and the subscription to the JOURNAL are separate. Few members, however, fail to subscribe.

The Association has five branches; Eastern, Cotton States, Southwestern, North Central States and the Pacific Branch. The policy governing the selection of sites for the annual meetings is based upon the belief that each geographic area should be entitled to a meeting in some sort of equitable rotation. The Association voted overwhelmingly for the second week in December as the best time of year for the annual meeting.

The special activities of the society, besides the publication of the JOURNAL, consists of the publication of the INDEX TO THE LITERATURE OF ECONOMIC ENTOMOLOGY and ENTOMA, which is a directory of pest control services. The Association has no placement service as such, but classified advertisements in the JOURNAL are made available to members at a very nominal fee. During World War II in cooperation with the Armed Services, 350 entomologists were placed in the services in a technical capacity. Three hundred other entomologists served in the combat services. At the close of the war a placement service was organized to assist in securing opportunities for entomologists being separated from the Armed Forces.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Total membership: 422. **Types of Membership:** active, emeritus and honorary. **Dues:** $10.00 per year (includes subscription to journal). **Journal:** JOURNAL OF IMMUNOLOGY. **Officers:** President: John F. Enders; Vice-president: Thomas P. Magill; Secretary-treasurer: John Y. Sugg, Cornell University Medical College, 1300 York Avenue, New York 21, N. Y.

The American Association of Immunologists was organized on June 19, 1913 at Minneapolis, Minnesota with fifty-two charter members and with Dr. Gerald B. Webb of Colorado Springs, Colorado as the first president. The purpose of the Association is to advance knowledge of immunology and related disciplines and to facilitate the interchange of ideas and information among investigators in the various fields. The JOURNAL OF IMMUNOLOGY, which is owned by and is the official journal of the Association, was founded in 1916, largely through the efforts of Dr. Arthur F. Coca. At that time the JOURNAL served as the official publication of both the Association and the Society of Serology and Hematology. In 1920 the two societies were combined and retained the name of the American Association of Immunologists.

The first scientific meeting of the Association was held at the Hotel Chelsea, Atlantic City, N. J. on June 22, 1913. Until 1938 the annual meetings were customarily held in conjunction with the annual meetings of the American Association of Pathologists and Bacteriologists. Since 1939 these meetings have been held in conjunction with those of the Federation of American Societies for Experimental Biology, and in 1942 the Association became a member of the Federation.

The standards of admission to membership in the Association have not been specified: eligibility is determined by the Council. At the present time there are 409 active members, 10 emeritus and 3 honorary members. Placement service for the Association and the choosing of meeting sites is handled by the Federation.

AMERICAN BRYOLOGICAL SOCIETY

Total membership: approximately 400. **Types of membership:** active, contributing, life, honorary and institutional. **Dues:** $3.50 per year in the U. S., $3.65 elsewhere (includes journal). **Journal:** THE BRYOLOGIST. **Officers:** President: Geneva Sayre; Vice-president: G. J. Ikenberry; Secretary-treasurer: Winona H. Welch, De Pauw University, Greencastle, Indiana.

Until 1949 the American Bryological Society was known as the Sullivant Moss Society, named in honor of William Starling Sullivant, and established in 1898. The founders of this early Society were Mrs. Elizabeth Britton and her student, Dr. Abel J. Grout. The first officers were elected in 1899, with Dr. Grout serving as the first president. The purposes of the Society are to "promote interest in the study of Bryology and Lichenology; to provide an opportunity for the presentation of research studies in these subjects; to provide a means of publication of such studies; to facilitate exchange of specimens; and to build reference collections of mosses, liverworts and lichens." All who are interested in any way in mosses, liverworts and lichens are eligible for membership. The annual dues include a subscription to THE BRYOLOGIST.

The founder of the Society journal, THE BRYOLOGIST, was Dr. Grout. The journal and the society had their beginnings in the Agassiz Association. The first issue of the journal was in the January 1898 number of the *Fern Bulletin* under the "Moss Department," and it continued in such manner until Vol. 3, No. 1, January 1900 when it became THE BRYOLOGIST.

The Society holds its annual meetings in connection with the Botanical Society of America. Meetings consist of programs of scientific papers, business and forays.

THE AMERICAN DAIRY SCIENCE ASSOCIATION

Total membership: approximately 1700. **Types of membership:** active and honorary. **Dues:** $5.00 affiliation fee and $8.00 yearly dues (includes receipt of journal). **Journal:** JOURNAL OF DAIRY SCIENCE. (Subscription rate to nonmembers, $10.00 per year in U. S. A., $10.50 elsewhere). **Officers:** President: H. A. Bendixen; Vice-president: H. B. Henderson; Secretary-treasurer: P. R. Ellsworth, Dairy Department, Ohio State University, Columbus 10, Ohio.

The Society which is now known as the American Dairy Science Association was organized on July 17, 1906 as the National Association of Dairy Instructors and Investigators. The first meeting was held at the University of Illinois, Urbana, Illinois and R. A. Pearson was elected to serve as the first president. Meeting yearly, usually in connection with the National Dairy Show, the organization continued under its original name until 1917 when by an overwhelming ballot the society became the American Dairy Science Association. The JOURNAL OF DAIRY SCIENCE made its first appearance in May 1916. It is the only journal published today in the United States which is devoted entirely to the science of dairying. Three types of articles are published: research articles, abstracts of literature and review articles.

Membership in the Association is obtained as follows: "any person is eligible to membership who is filling a position of responsibility connected with the dairy industry or having an interest in the dairy industry, who has had a college or university training in technical science, or any person filling a responsible position in the dairy or an allied industry or field of a professional character requiring a technical knowledge of dairying of a high order, by paying a

$5.00 affiliation fee and $8.00 dues each year." Honorary membership (limited to one person a year) involves election by the Honors Committee and entitles the appointee to life membership in the Association. The man so elected must have been a member of the Association for twenty years and have contributed outstandingly towards the success of the organization.

The policy governing the selection of sites for annual meetings is that these meetings be held at land grant colleges throughout the country with every other year scheduled for the midwest. The Association does not have a placement service but a committee does work on curriculum studies for various colleges and Dairy Departments throughout the country.

THE AMERICAN INSTITUTE OF NUTRITION

Total membership: 380. **Types of membership:** active and emeritus. **Dues:** $11.00 (includes receipt of journal). **Journal:** JOURNAL OF NUTRITION. **Officers:** President: C. M. McCay; Vice-president: P. L. Day; Treasurer: N. B. Guerrant: Secretary: J. M. Orten, Wayne University College of Medicine, Detroit 26, Michigan.

The American Institute of Nutrition originated as the result of suggestions from several sources shortly after 1919 that there was need for a journal in the then newly developing field of nutrition and of a society to sponsor it. Approximately ten years later a provisional charter of incorporation was granted by the Education Department of the University of the State of New York to "Drs. E. F. De Bois, Graham Lusk. Lafayette B. Mendel, John R. Murlin, and Mary S. Rose and their associates and successors, as an educational institution for the dissemination of scientific knowledge regarding nutrition and particularly by the publication of a journal devoted to the science of nutrition." The provisional charter was replaced by an absolute one in November 1934. The first formal meeting was held in March 1934 in New York City at Cornell University and was attended by 70 members and 110 guests. From 1934 through 1940 the Institute held annual meetings on the day before the meetings of the Federation of American Societies for Experimental Biology. Beginning in 1941 the meetings have been held with those of the other societies of the Federation, for admission to the Federation was granted in 1940.

Standards of admission to the American Institute of Nutrition are: "qualified investigators who have independently conducted and published meritorious original investigations in some phase of the chemistry of nutrition and who have shown an active professional interest in nutrition for at least 5 years are eligible for membership in the Society." The annual dues include a subscription to the Institute's journal, the JOURNAL OF NUTRITION.

Special activities of the society include a *Registry of Pathology of Nutritional Diseases.* Representatives of the society are appointed to joint committees with other societies on BIOLOGICAL NOMENCLATURE and on the Division of Biology and Agriculture and the Food and Nutrition Board of the National Research Council.

AMERICAN ORNITHOLOGISTS' UNION

Total Membership: 3,175. **Types of membership:** fellows, emeritus fellows, honorary fellows, corresponding fellows, regular members, associates, and patrons. **Dues:** Fellows, $6.00; members, $5.00; associates, $4.00 (all dues include journal). **Journal:** THE AUK. **Officers:** President: Josselyn Van Tyne. First Vice-President: Alden H. Miller. Second Vice-president: Ludlow Griscom. Treasurer: Reuben A. Moser. Secretary: Albert Wolfson, Dept. of Biological Sciences, Northwestern University, Evanston, Illinois.

The American Ornithologists' Union was founded on September 28, 1883 in New York City. It was incorporated in Washington, D. C. in November, 1888. The original membership numbered 184.

The purpose of the Union is the promotion of ornithological science. Any person who is interested in birds may apply for admission. The aim of the society is met by the publication of its organ, THE AUK, a quarterly journal; by the publication of the "CHECK-LIST OF NORTH AMERICAN BIRDS"; by the annual meetings; and by the work of committees and members. The current volume of THE AUK is the 69th. The fifth edition of the CHECK-LIST is in preparation, the fourth edition having been published in 1931. The funds of the Union are used primarily for the publication of the journal and are derived mostly from annual dues. Additional sources of income are from sale of publications, life memberships, contributions and interest from invested funds.

The types of membership and their conditions are as follows:

(1) Fellows: limited to 50 individuals who are citizens, subject or residents of the Americas; elected by other fellows. (2) Emeritus Fellows: persons transferred to this class by their own desire and the vote of the Council. (3) Honorary Fellows: limited to 20 persons, who are not residents of the United States or Canada; chosen for their eminence in ornithology; elected by Fellows and Members. (4) Corresponding Fellows: limited to 75 persons who are not residents of the United States and Canada; elected by Fellows and Members. (5) Members: limited to 200 persons who are residents, subjects or citizens of the Americas; elected from class of Associates by Fellows and Members. (6) Associates: unlimited number; may be residents of any country; elected by a committee of the officers of the Union; proposals for Associate Membership may be made by any Fellow, Member or Associate. (7) Patrons: any member is eligible upon payment of $1,000 to the Union; elected by the Council. (8) Life Member: this type of membership may be obtained by members of all classes upon payment of $100 singly or in four equal annual installments. Life Members and Patrons are exempt from annual dues.

Special activities of the Union include the sponsorship of important works in ornithology, the granting of student awards, the Brewster Medal (annual award) and a Committee on Bird Protection.

In choosing the sites of annual meetings an attempt is made to meet in different areas of the U. S. and Canada. Invitations are usually extended by Museums, Universities and ornithological organizations. The Fellows and Members vote for the annual meeting site.

AMERICAN PHYTOPATHOLOGICAL SOCIETY

Total membership: approximately 1,600. **Types of membership:** charter, annual, patrons, sustaining associates, emeritus. **Dues:** annual members, $10.00 per year; patrons, $1,000.00 in one sum; sustaining associates, at least $100.00 annually. **Journal:** PHYTOPATHOLOGY. **Officers:** President: George L. McNew, Vice-president: George F. Weber; Treasurer: A. E. Dimond; Secretary: S. E. A. McCallan, Boyce Thompson Institute, 1086 North Broadway, Yonkers 3, N. Y.

The American Phytopathological Society was organized on December 30, 1908 at the Baltimore meeting of the American Association for the Advancement of Science. The first regular meeting with presentation of papers was held a year later at the Boston meeting of the AAAS. There were 130 Charter Members of the Society. Today the membership is over 1,600; about 200 members are from foreign countries. The Society has five divisions: Pacific, Southern, Northeastern, Potomac and North Central. The former Canadian Division became the Canadian Phytopathological Society in 1930.

All persons interested in the study of phytopathology, including the practical control of plant diseases, are eligible for membership. The majority of members are professional plant pathologists and graduate students in plant pathology, but mycologists, entomologists, agronomists, horticulturists, chemists and progressive farmers also belong. The classes of membership are the original Charter Members, the Annual, or Regular, members, who currently pay dues of $10.00 per year, Patrons, who contribute $1,000 in one sum, Sustaining Associates or industrial firms that contribute at least $100 annually, and Emeritus Members, who have been members of the Society for at least 20 years. Patrons and Emeritus Members have all the privileges of Annual Members. Annual members, Patrons and Sustaining Associates receive the official journal without further cost.

PHYTOPATHOLOGY was founded in 1911 as a bimonthly journal; beginning in 1918 it has been issued monthly. The journal consists mainly of original research papers and has a subscription price of $10.00 per year. The Society also publishes at irregular intervals PHYTOPATHOLOGICAL CLASSICS, consisting of translations of early European papers of particular interest. Since 1944 the Society has compiled an annual summary of nation-wide results with the newer fungicides. Currently, the activities of the Society are being carried on by some 20 different committees. One of these, the Placement Committee, assists members in securing new positions.

The Society holds regular annual meetings, usually in December or in the fall, in conjunction with AAAS, AIBS or other societies with joint interests. Summer meetings, and in some cases, winter meetings are held by the various divisions.

AMERICAN SOCIETY OF PARASITOLOGISTS

Total membership: 715. **Types of membership:** active, honorary foreign, life, family. **Dues:** $6.00 per year for active members (includes journal); $1.00 extra for family membership (no journal). **Journal:** JOURNAL OF PARASITOLOG. **Officers:** President: E. W. Price; Vice-president: P. D. Harwood; Treasurer: Robert M. Stabler; Secretary: A. C. Walton, Department of Biology, Knox College, Galesburg, Illinois.

Under the leadership of a group of Baltimore-Washington scientists interested in parasitology and stimulated by the success of the Helminthological Society of Washington, the foundations of the American Society of Parasitology were laid at a meeting held in Washington, D. C. on December 30, 1924. The first annual meeting of the Society was held in connection with the AAAS meetings at Kansas City, Mo. in December 1925. Under the first group of officers (H. B. Ward, President) the membership expanded from 32 to 321 during the year and these were designated as Charter Members at the Kansas City meeting. Under the leadership of Dr. E. C. Faust a China Branch of the ASP was founded in 1926 and flourished for a number of years. At the sixth annual meeting held at Cleveland in December 1930, the first honorary foreign members were elected. At the 1931 New Orleans meeting Dr. Ward was elected the first Life Member of the Society. In 1932 the American Society of Parasitologists was incorporated under the laws of the District of Columbia for the purposes of advancing research in and the dissemination of knowledge about the part played by parasites in nature. In 1937 the Society became a member of the Biology and Agriculture Division of the NRC; it is a Charter Member of the AIBS and is affiliated with Section F. of the AAAS.

When the Society was formed in 1924 the JOURNAL OF PARASITOLOGY was owned and published by Dr. Henry B. Ward, but through his cooperation records of the annual meetings were published and the JOURNAL became an increasingly important outlet for the appearance of research work of members of the ASP. At the annual meeting of 1925, the suggestion that the JOURNAL OF PARASITOLOGY become the official journal of the Society was proposed and steps taken to initiate this aim. At the seventh annual meeting held in 1931, Dr. Ward offered to present the JOURNAL to the Society. The first editorial board was appointed and the new leadership began with Vol. 19: (1932). Beginning with the meeting of December

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Information About . . . CORNELL MEETINGS, September 8-10, 1952

HOUSING

Housing blanks were printed in the April issue of the AIBS BULLETIN (page 25). To obtain extra housing forms or make reservations please contact: Sanford S. Atwood, Dept. of Plant Breeding, Cornell University, Ithaca, N. Y.

PRESS ABSTRACTS

To cooperate with the press in reporting papers given during the meetings, authors are asked to submit 6 copies of an abstract of 150 words or less, to: George H. M. Lawrence, Bailey Hortorium, Cornell University, Ithaca, N. Y.

PLACEMENT SERVICE

A room in Willard Straight Hall will be used by the AIBS Placement Service to register applicants and arrange interviews with employers. This service will be available to all who are registered.

1932 the JOURNAL has published the complete program as well as abstracts and minutes of all Council and Society business meetings. Complete membership lists have appeared from time to time; the last list appearing in October 1951 (Vol. 37, no. 5).

According to the Constitution of the Society "any person interested in parasitology may be a candidate for active membership", such candidates accompanying their application with a sponsor card of an active member. Election is made by the Council of the Society. For outstanding service in the field, the Society has established a quota of 12 Honorary Foreign Memberships and from time to time elects individuals as vacancies occur. For outstanding service on the part of active members the Society may elect selected individuals to the status of Life Members. Family memberships are also available to others in a family where one individual is already an active member (these memberships carry a minimum $1.00 annual dues). Honorary Foreign membership entitles the holder to a reduced subscription rate to the JOURNAL while Life members pay no dues and receive the JOURNAL free. Non-members and libraries may subscribe to the JOURNAL for $7.50 per volume.

The annual meetings have usually been held in connection with the AAAS but several very successful sessions have been held in connection with other societies and in other places. The 1952 meeting will be held with the AIBS and plans for future meeting sites decided at that time.

Series will be continued in October Bulletin

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(3) Achromatic Dry Objective Pv 20/0.45

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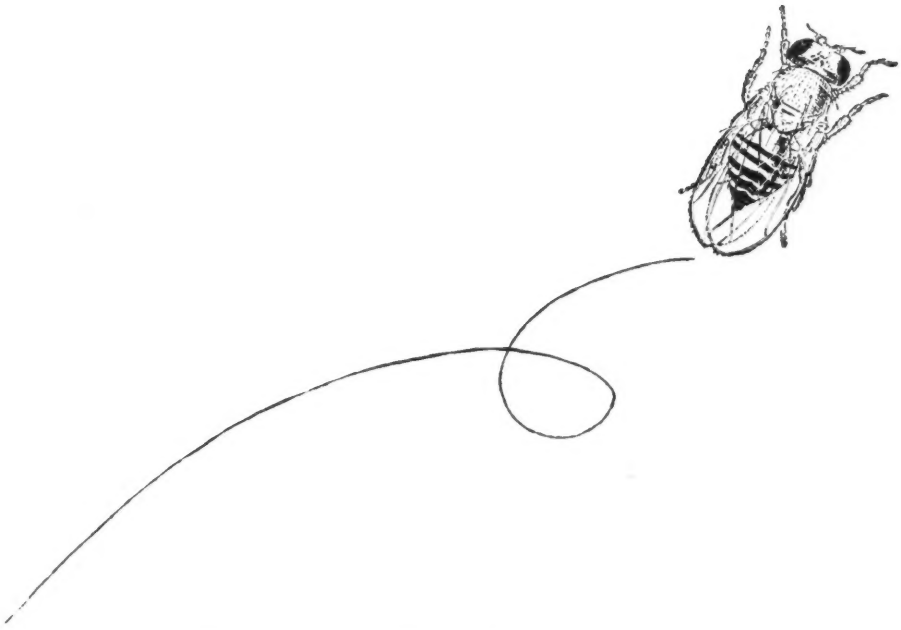

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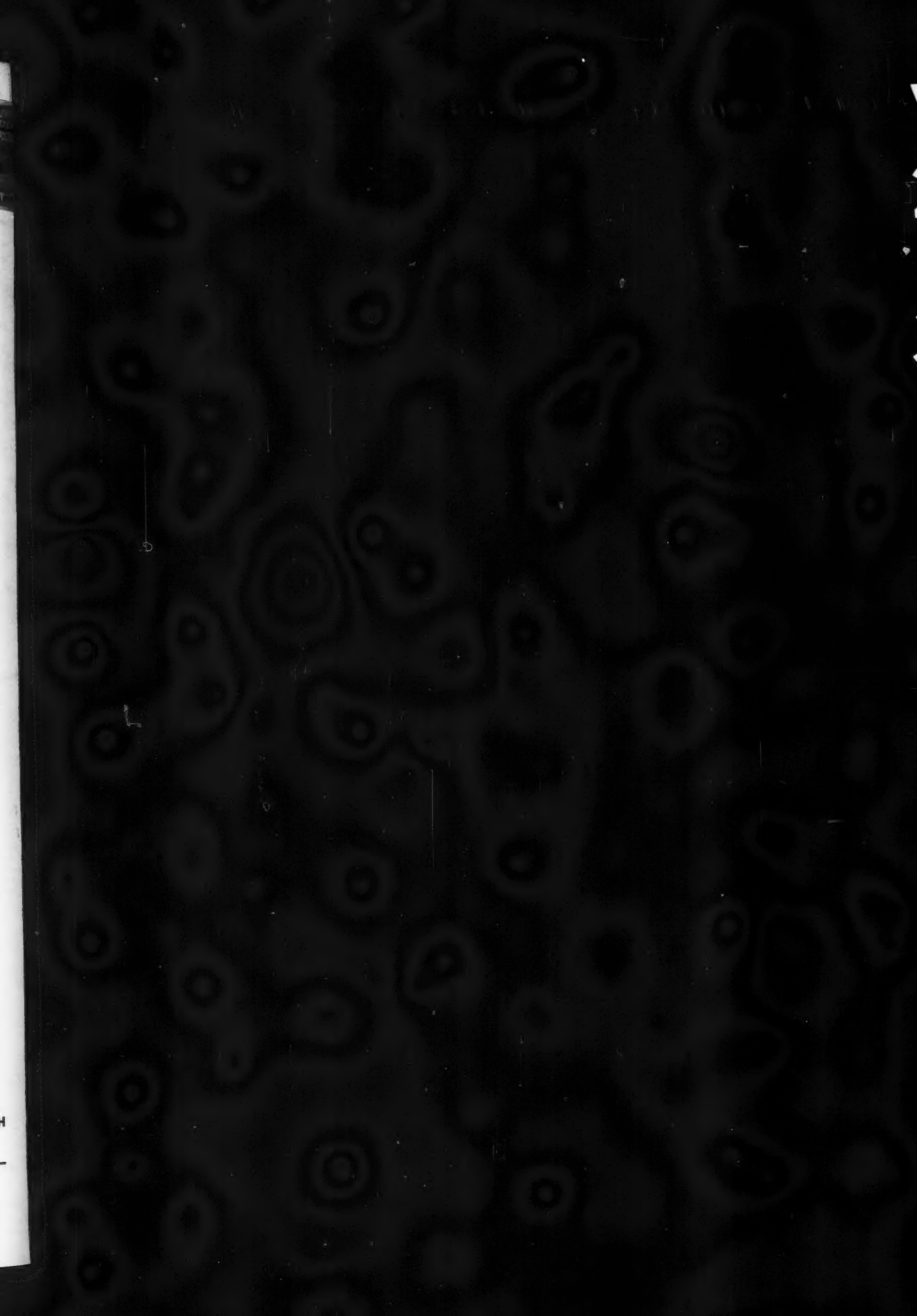
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